Paper TRADE JOURNAL

DECEMBER 19, 1952 . . . Bowaters Plan 1954 Operations in Tenn., Page 11 . . . Hoberg Starts New Machine, Page 12 . . . Britain Eases 1953 Pulp Controls, Page 14.

135:25

LIBRARY DEC 29 1952 ALABAMA POLYTECHNIC INSTITUTE

Hot water for pulp washing

uncontaminated . . . at the desired temperature

Recover heat from steam released in the digester blow tank with a Swenson Surface Condenser! Its operation is automatic and synchronized with blowing cycles. You'll get *clean* hot water at the desired temperature for pulp washing.

Let a Swenson Engineer help you arrange a condenser system to meet your specific needs!

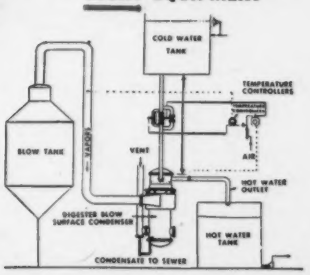
SWENSON EVAPORATOR COMPANY
15687 Lathrop Ave., Harvey, Illinois
Pulp Washers • Evaporators • Filters
• Digester Blow, Surface and Turpentine Condensers

SWENSON
Proved Engineering for the Process Industries
SINCE 1889

A Division of WHITING Corporation

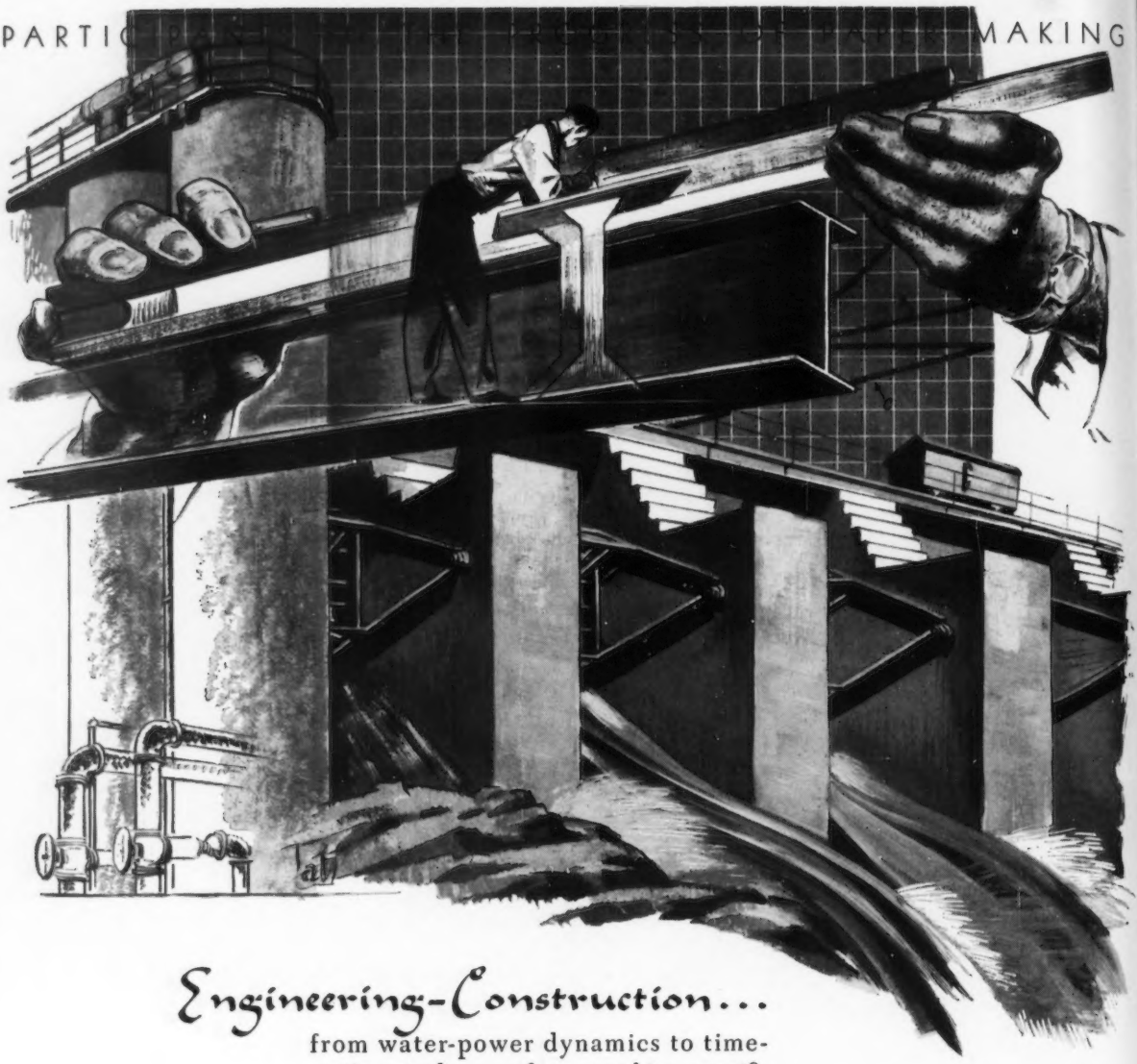
TALK WITH A SWENSON ENGINEER

HE WILL RECOMMEND THE RIGHT EQUIPMENT



Flow diagram shows general arrangement of Blow Condenser System

PARTI[illegible] MAKING



Engineering-Construction...

from water-power dynamics to time-motion study . . . from machine specification to complete structural design . . . engineering-construction helps keep the paper industry *ahead* of mere modernity!

Fourdrinier Wires...

as fabricated for 56 years by Appleton Wire Works, Inc., integrate priceless experience with tireless research . . . resulting in the *earned* reputation that *"Appleton Wires are Good Wires!"*

APPLETON WIRE WORKS, INCORPORATED • APPLETON, WISCONSIN

If better valves
could be made,
POWELL would make them
This is no idle boast because, for more than a century, Powell has been satisfying the demands of industry for the best valves it is possible to produce. As a result, Powell Valves have an enviable reputation for dependable service, long life and minimum maintenance.
The Wm. Powell Company
Cincinnati 22, Ohio
Fig. 2491.—Stainless Steel O. S. & Y. Gate Valve for 150 pounds W. P. Available in a variety of other corrosion-resisting metals and alloys. Also made with screwed ends.
POWELL
BRONZE, IRON, STEEL AND CORROSION-RESISTING VALVES
DEPENDABLE VALVES
SINCE 1846

LONGER LIFE FOR BEARINGS

...when you use TEXACO URSA OIL X★★

This bearing has been in service for six years. Note how clean it is...how bright the polish on the rollers. It has been lubricated exclusively with *Texaco Ursa Oil X★★*

Leading paper mill operators find that the superior lubricating qualities of *Texaco Ursa Oil X★★* keep dryer roll bearings like new . . . eliminate costly replacements and unscheduled shutdowns. *Texaco Ursa Oil X★★* is fully detergent and dispersive and has extra resistance to oxidation. It will not sludge or foam . . . prevents accumulations of paper dust and water in oil lines or bearings . . . prevents rust whether machines are running or idle.

Use *Texaco Ursa Oil X★★* to keep your production high, your maintenance costs low. *Texaco Ursa Oil X★★* is approved by leading paper machine and bearing manufacturers.

In your enclosed reduction gears, use *Texaco Meropa Lubricant*. It has outstanding "EP" characteristics, resists oxidation, thickening and will not foam. It assures longer gear life, lower maintenance costs.

Let a Texaco Lubrication Engineer help you to more profits on paper. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO Lubricants and Fuels

FOR THE PAPER INDUSTRY

Faithfully yours 50 *for Fifty Years*

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

Paper TRADE JOURNAL

DECEMBER 19, 1952, *Vol. 135, No. 25*

Bowater's Calhoun Plant to Produce in 1954.. 11

Honor Oxford Paper Co..... 11

Hoberg Starts Up New No. 1 Machine..... 12

British Pulp Controls Eased for 1953..... 14

Forestry Operations at Mando..... 18

Removal of Bark From Chips and Wood Pulp. 23

Government Bids and Awards..... 32

Larger Sizes In Seamless Tubing..... 39

Light-load Smokeless Stoker..... 40

Piston Positioner 45

$500,000 Drier Assembly Arrives at Harmac.. 45

D E P A R T M E N T S

Our Business	7	Prices of Materials	43
Trends	9	Suppliers	43
News of the Week	11	New Literature	44
People	16	Financial	47
Industrial Section	23	Government	48
New Equipment and Supplies	39	Production Ratio	48
Prices	42	ADVERTISERS INDEX	62
CLASSIFIED ADVERTISING	50		

NEXT WEEK—*Overrated centrifugal pumps are inefficient and costly. To avoid waste, follow the advice of Allis-Chalmers expert F. R. Forrest in "Accumulation of Safety Factors in Centrifugal Pump Applications."*

If you're dissatisfied with your present paper sales and can't discover a solution, take a hint from S. W. Franklin and read "What's Wrong With My Business or Could It Be Me?"

S U B S C R I P T I O N S

Single Copy 25c. U. S. $5.00 per year to mill personnel, others $7.50.
Canada $7.00 per year.
Latin American Countries $15.00 per year.
All Other Countries $20.00 per year.

Published every Friday by LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 36. Phone: PLAZA 7-2370.

GEORGE E. LOCKWOOD.... President and Treasurer
ARTHUR E. GORDON.....Vice-President
FREDERICK E. WINKLER.....Secretary
HENRY J. PERRY.....Editor
R. E. THUEMMES.....Managing Editor
E. P. NUTTALL.....Associate Editor
D. BRUCE OTIS, JR. .....Associate Editor

Entered as Second Class Matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 North Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1952 by Lockwood Trade Journal Co., Inc. *Paper* established Feb. 17, 1899, combined with *Paper Trade Journal* Nov. 16, 1899. *Paper* established Sept. 21, 1910, combined with *Paper Trade Journal* February 19, 1926. All rights to the above titles reserved. Contents of *Paper Trade Journal*, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. *Paper Trade Journal* is indexed in Industrial Arts Index and Engineering Index. Also publisher of *Lockwood's* Annual *Directory of the Paper and Allied Trades.*

REMEMBER THESE DATES

JAN. 28, 29, 30: C.P.P.A., Annual Meeting, Mount Royal Hotel, Montreal, Que., Canada

FEB. 15-20: APPA, Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

FEB. 16-17: Salesmen's Assn., of the Paper Industry, Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

FEB. 16-19: TAPPI, Annual Meeting, Commodore Hotel, New York, N. Y.

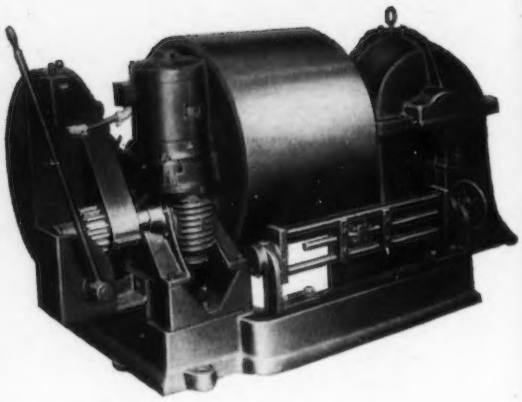
FEB. 17: SAPI, Luncheon, Waldorf-Astoria Hotel, New York, N.Y.

FEB. 18: APPA, Open Industry Meeting, Starlight Roof, Waldorf-Astoria Hotel, New York, N.Y.

FEB. 18: APPA, Annual Dinner, Grand Ballroom, Waldorf-Astoria Hotel, New York, N.Y.

APRIL 26-29: American Institute of Chemical Engineers, Joint Meeting with Chemical Institute of Canada, Royal York Hotel, Toronto, Canada.

JUNE 9-11: APPMSA, National Meeting, Atlanta-Biltmore Hotel, Atlanta, Ga.



Black-Clawson Calender and Calender Drive Assembly

Massive box-type frames, bearings and rolls removable endwise through the frames, doctors mounted from bearing housings, and many other dependable features too numerous to mention characterize the Black-Clawson calender stack.

Emergency mill experience suggests that no calender and calender drive assembly is adequate unless the direction of the drive can be reversed almost instantly when plug occurs. Black-Clawson calender reversing drives meet that requirement.

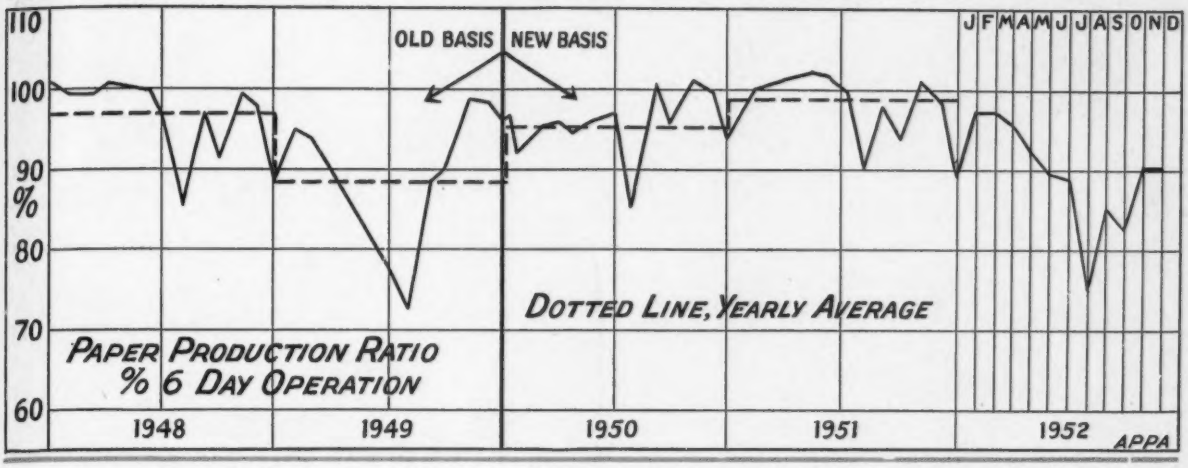
Bitter mill experience all too frequently shows the need of a quick-reversing drive in the interest of operator safety. Safety first is ever good practice.

Address inquiries to Hamilton

THE BLACK-CLAWSON CO.

HAMILTON, OHIO

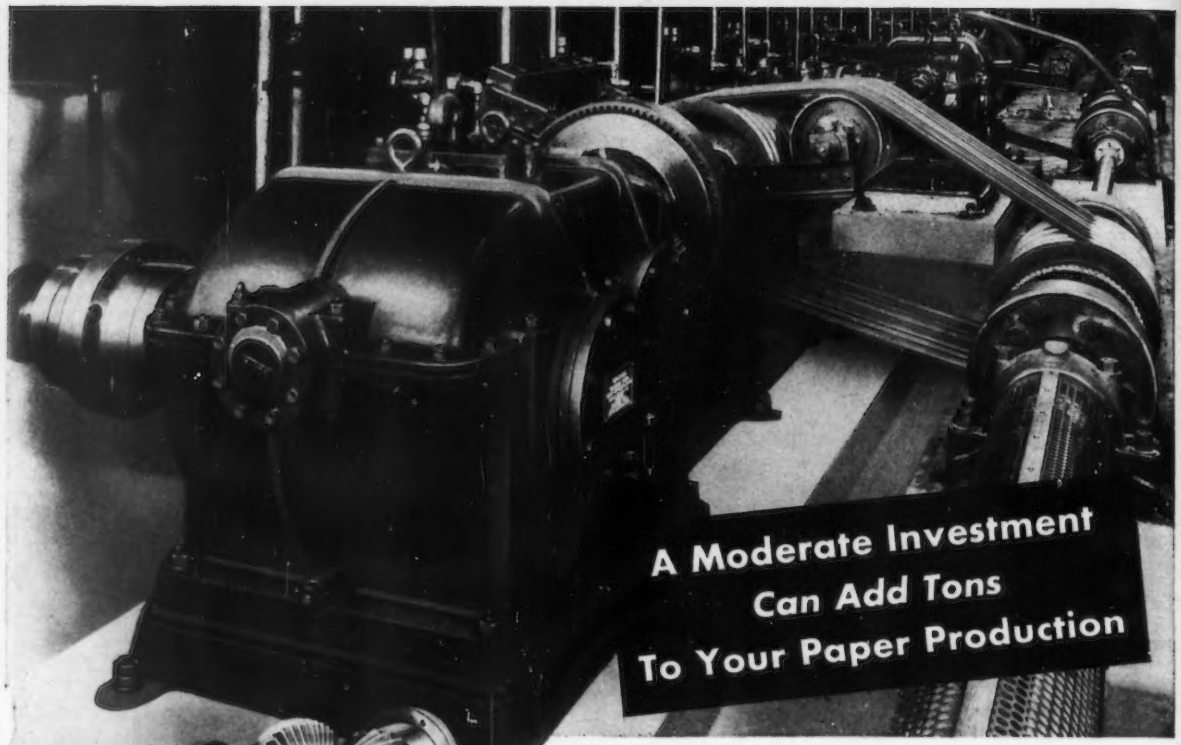
Divisions: SHARTLE BROS. MACHINE CO., Middletown, Ohio • DILTS MACHINE WORKS, Fulton, New York
Subsidiary: B-C INTERNATIONAL, LTD., London, England
Western Sales Office: Mayer Bldg., Portland, Oregon • Southern Sales Office: 685 W. Peachtree St., N. E., Atlanta 3, Georgia
Northern Sales Office: 814 N. Superior St., Appleton, Wisc. • Associate: THE ALEXANDER FLECK LIMITED, Ottawa, Canada

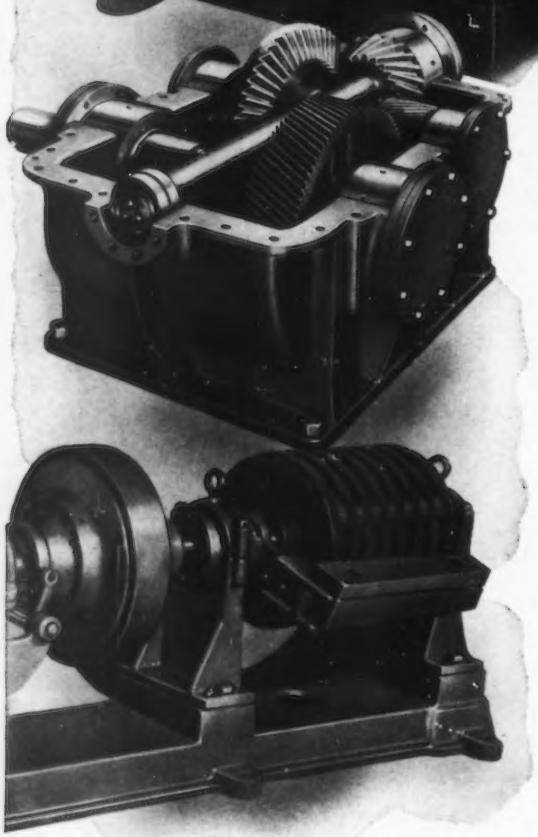


Brief of Important Figures

Source	Production	WEEK ENDING Dec. 6, '52	Nov. 8, '52	Dec. 8, '51
APPA	Paper Production Percent Capacity[3]	92.4	90.4	98.5
	Unbl. Kraft Paper Production Percent	N.A.	84.4	107.7
NPA	Paperboard Operating Ratio Percent Inch Hours	95	97	86
		Oct. 1952	**Sept. 1952x**	**Oct. 1951**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	837,000	756,475	957,000
	New Orders ....Tons	870,000	809,151	941,000
	Unfilled Orders ....Tons	814,493	785,638	958,800
	Shipments ....Tons	841,000	750,838	953,000
		Nov. 1952	**Oct. 1952**	**Nov. 1951**
NPA	Paperboard Production ....Tons	964,046	1,222,424	794,359
	New Orders ....Tons	982,785	1,225,736	685,733
	Unfilled Orders ....Tons	475,365	452,959	365,363
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufacturers Total Index	239	228	232
	Durable Mfg. Index	287	268	273
	Nondurable Mfg. Index	200	195	199
	Chemical Products Index	310	300	303
	Mfg. Food Products Index	189	185	192
	Printing and Publishing Index	166	157	180
ODC	Magazine Advg.-Printer's Ink Index	387	369	379
	Prices Index			
BLS	Consumers Price Index[1]	190.8	191.1	186.6
	Wholesale all Commodities[4]	111.7	112.2	113.4
	Wholesale Processed Foods	110.5	110.5	110.9
	Commodities other than Farm Products and Foods[4]	113.1	113.0	114.8
	Wholesale Pulp, Paper[4] and Allied Products	115.7	115.6	119.4
	Purchasing Power of Dollar, Consumers Prices[1]	52.4	52.3	53.6
	General Activity Index			
FRS	Mfg. Production-Worker Payroll[4]	139.6	133.0	130.9
	Unemployment Compensation Initial Claims (M)	568	733	724
	Miscellaneous Carloadings–Thousands of Cars	1,579	1,852	1,573
	Electric Output (Million KW hr.)	38,759	39,752	35,275
PTJ	Average 32 P & P Common Stocks as of Dec. 13	$36.75	$34.91	37.12

[1] 1935–39 = 100 Unadjusted Index.
[2] For Five Weeks.
[3] New 6-7 day basis.
[4] New Index 1947–1949 = 100.
* For details see APPA Monthly Statistical Summary—October 1952 Estimated Figures.
° Latest Month Available on Request.
x Revised Figures. N.A.: Not available.





The Sandy Hill Selective Drive

All Sandy Hill Selective Drives were installed and started up and are still running without structural or functional failure.

This reflects the attitude of the company's designers in designing adequately for paper machine operating strains. It reflects the Sandy Hill designers' knowledge of paper mill operating conditions which the drives must meet in order to function without failure or annoyance to the user.

Sandy Hill does not build a cheap drive because it believes that a drive which will last over a long period of years with no more attention than adequate inspection and lubrication is the most economical per ton of paper made.

Features

Unvarying draw between sections.

Fineness of draw regulation.

Simplicity of design that keeps maintenance within the ability of the good paper mill millwright.

Power saving and low first cost to a degree hitherto unknown.

No detectable slippage due to the V-belt feature of the drive.

Saving in space, no basement or mezzanine needed for line shaft.

Write on your company letterhead for further information about an adequately designed drive.

The Sandy Hill Iron & Brass Works

Hudson Falls, N.Y.

Paper TRADE JOURNAL

TRENDS

Market Theme Is "Firming"

Shifts in pulp quotes slight . . . .

The dominating theme of today's paper mart is *firming*, likewise true in the world market for wood pulps. Despite the scattered soft spots which are created by inventories not yet worked off, and which here and there result in spot offers of distress lots, the trend is definitely towards a stronger market.

Influencing this condition is the upturn in other world markets—in paper, textiles, and other phases of the economy. Reported to be slowest to experience the revival, Britain's textile pickup is held to be of boom proportions, particularly in rayons. Coming at a time when import restrictions on wood pulps have been lifted, it is expected that demand will rise, particularly for the overseas pulps where dollar shortages will not be a deterrent.

Most important buyer of Scandinavian pulps, this British market factor alone could materially strengthen the entire world market, that is if the volume is of sufficient size to deplete the heavy stocks of Swedish and Finnish market pulps.

NAPA reports "The Squeeze Is Over"...

Reporting on the spot market and overseas stocks which influence these offers, the December report of the National Association of Purchasing Agents, NAPA just released, advised its members that "There will be plenty of pulp and prices will be in line. . . . Don't get nervous about your pulp supplies. . . . There are big inventories over there (Scandinavia) and the importers are making persistent efforts to reduce them. . . . The market while steady certainly is not strong. . . . Paper mills are all running well now and it looks like a stronger demand for pulp by next Spring, although no particular tightness in supplies is indicated; neither is there any sign of a price increase ahead. . . . The old squeeze is over."

Domestic grades are unchanged . . .

First-quarter prices are popping as we go to press. By next week, they should be fully known. Indications are that there will be no change at all in domestic pulps from fourth-quarter quotations, and only minor shifts from *delivered* or *partly-delivered* basis to *on dock* for the overseas pulps.

The market is highly competitive, but on the whole these prices also are unchanged.

Canadian bleached krafts strong . . .

So far as the Canadian bleached krafts are concerned, these grades are unchanged and strong. Unbleached grades also probably will be unchanged; no shift has been reported yet.

Expected too is that bleached sulfites will be at fourth quarter levels of $140/145, delivered basis. No word has come of the general direction unbleached sulfites will take. One grade is reported at $130 delivered, down $5 from early fourth-quarter levels. This lacks confirmation, however.

If rumors amount to anything—and it appears they may be no more than trial balloons—the Canadian unbleached sulfites are not going to be reduced from the $135 asked for the fourth-quarter.

Newsprint price rise seen imminent . . .

What is believed to be most certain is the rise in Canadian newsprint price to this and other world markets—predicted by this writer some weeks ago.

According to the Journal's Ottawa correspondent, there are strong hints now in the grapevine that newsprint prices may be revised upwards during the coming months because of the prospects of rising costs of operation: materials, woods, labor, freight, etc.

However, says the report, the newsprint producers are definitely going to restrict their increased prices to the minimum possible under the conditions. "This is certain on account of stiffening competition and closing of the gap in the supply-and-demand situation both in Canada and the United States, as well as in world markets outside this hemisphere.

"In fact, the grapevine in the industry reveals that Canadian newsprint producers are planning already to absorb some of the known higher costs and not to pass them on to their customers wherever this is possible. In other words, when the prices of Canadian newsprint are revised upwards in the coming months, these new prices will not reflect the rising production costs, and it may mean that these Canadian companies may not record such profit margins as in recent years.

"There is even some doubt in Canadian industry now that newsprint mills may operate at full capacity next year due to a slackening in some demand. It may level off and cause some mills to *go easy* in their production schedules, unless something happens between now and the coming months to warrant full capacity operations by all mills. U. S. consumption, it is forecast, may level off, and overseas markets may be unable to absorb the difference.

"Of course, anything may happen to change this outlook, especially if the dollar-sterling problem should be solved, as anticipated in Canadian trade circles. But, in general, the outlook is that a distinct leveling off in newsprint demand can be expected in coming months and this may affect newsprint production schedules.

Freight costs sure to rise . . . . .

"In the first place, freight costs are certain to rise, and this is an important factor in the price structure in Canada which sends most of its output across the border to U. S. markets. Freight costs account for approximately 10 per cent or more of general newsprint costs. If freight charges go up, as expected, this would add more burden on the producers. Already there are two applications before the Board of Transport Commissioners in Ottawa seeking two 9 per cent boosts in freight rates. If these applications by the railways are granted in whole or in part, Canadian newsprint producers would be forced to adjust their prices to meet these new additional costs.

"Pulpwood costs in the coming year also will be higher, it is foreseen, since the cut at higher cost of last year will be used, and there is nothing to suggest any declining material costs. Indeed the outlook is for higher costs of such essential materials.

"In the third place, the outlook for labor costs is not bright. It is no secret that pressure from this angle will increase. Newsprint mill wages appear to be rising in all areas, and this means more cost pressure for the producers.

"This is the outlook for the Canadian newsprint producers, and it seems likely that upward revision of prices may be coming, unless there is a change of some sort to preclude such pressures on costs of production and transportation."

Tied in with the cost of unbleached sulfite pulps, as newsprint is, Canadian agents are not looking for a downward revision in the first-quarter pulp prices, despite market conditions. Time will tell.

—E.P.N.

Paperboard Production (Tons)*

	Dec. 6 1952	Nov. 29 1952	Dec. 8 1951
Production	243,936	228,894	201,888
New Orders	339,672	188,958	265,609
Unfilled Orders ...	549,762	457,365	428,921
% of Activity	95	91	86

* Source: National Paperboard Assn.

THIS STORY
MAY SAVE YOU

Thousands of Dollars

Research Corporation Offers

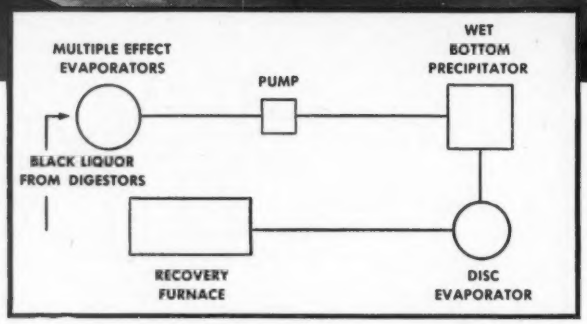
WET RECOVERY SYSTEM

for Electrical Precipitators

A shortcut in the recovery of chemical compounds from Recovery Furnace Stack Gas offered by Research Corporation, assures an appreciable saving in operating and maintenance cost. That's because the new Wet Recovery System gets the precipitated dust into the black liquor as soon as possible after it has been removed from the gas.

Instead of collecting dust in hoppers at the bottom of the precipitator and conveying it, in the dry state, to black liquor tanks, the new method utilizes a liquor sump or tank directly under and an integral part of the Cottrell Precipitator. Black liquor flows to this wet bottom where the recovered dust is taken up in solution or suspension. In this continuous process, the black liquor discharges to the feed going to the disc evaporators.

The Wet Recovery System does away with handling dust in the dry state. It eliminates steam coils and heat insulation formerly needed to prevent condensation in the hoppers. It obsoletes such expensive equipment as hopper vibrators and steam-jacketed conveyors.



COMMERCIAL installations have proved the economy of this new system. They have demonstrated, too, that dust collection efficiency remains as high with the wet recovery system. For complete data, write for Editorial Reprint P-1.

RESEARCH CORPORATION

405 Lexington Ave., New York 17, N. Y.
122 South Michigan Avenue, Chicago 3, Illinois
Bound Brook, New Jersey

RQ-132

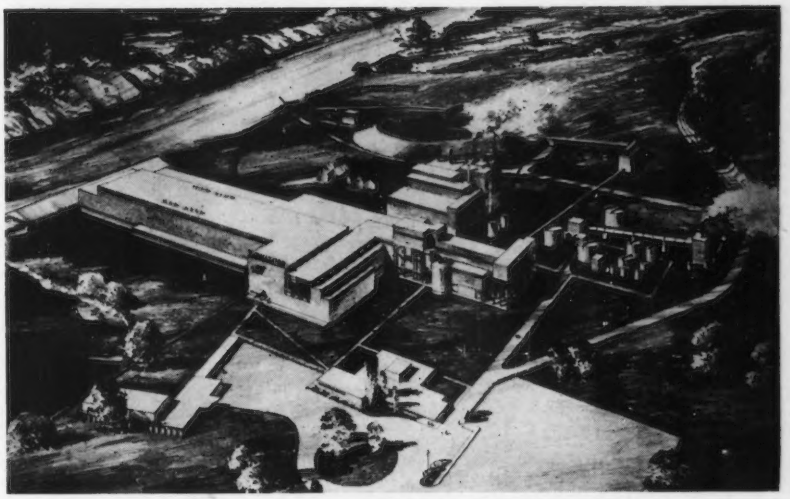
Bowater's Calhoun Plant to Produce in 1954

Thorough planning has been revealed in the construction of Bowater's new $51 million newsprint and pulp mill, now in progress at Calhoun, Tenn. The mill will begin production sometime in 1954 and is expected to deliver 125,000 tons of newsprint and 50,000 tons of market pulp per year.

The newsprint furnish will require daily consumption of approximately 360 tons of pine groundwood and 120 tons of bleached kraft pulp. Daily production of kraft pulp, both bleached and unbleached and including that for sale, will run approximately 312 tons.

Original plans and surveys for the mill were made by J. E. Sirrine Co., Greenville, S. C., and they designated the 1400 acre site on the Hiwassee River in McMinn County. Much of the land was obtained from the TVA, and TVA has contracted to furnish 17,000 kw of power.

Future operations will demand employment of over 800 workers at an estimated total annual wage of $7 million. Each day 906 cords of pine will be shipped into the mill by rail, river barge, or truck.



Paper Machines

Beloit Iron Works are furnishing two 252″ newsprint machines, designed for speeds up to 2000 feet per minute. Each will be equipped with a Beloit patented cross-flow distributor, 116 foot Fourdrinier wire, automatic suction pickup roll, suction transfer press, wringer roll, two straight suction presses, and fifty-five 60″ paper dryers with eleven felt dryers. The machines will be driven by General Electric sectional drives.

Plant Personnel

Supervisory personnel of the Bowaters' organization now on the job are: K. O. Elderkin, general manager; V. J. Sutton, mill manager; C. E. Opdyke, comptroller and treasurer; D. W. Timmis, secretary and assistant treasurer; A. W. Bentley, woodlands consultant; George R. Keens, industrial relations; R. B. Reid, purchasing agent; M. J. Osborne, electrical engineer.

Equipment

The following is a partial list of equipment specified for the new installation:

Fibre-making process barkers; Rotex chip screens; Chicago Bridge & Iron digesters; Yarnall-Waring blow valves; Foster-Wheeler steam and turpentine recovery; IMPCO vacuum washers, thickeners, wet machines, deckers, saveall; J. O. Ross hoods and fans, pulp dryer; Appleton Cowan screens; Sprout-Waldron tailing refiners; Allis-Chalmers bull screens, stock and water pumps; E. D. Jones jordans, dry broke disintegrator; Lamb-Grays Harbor pulp cutter and conveyor; Washington Iron bailing press; Montague Machine Waterous grinders; Jeffery hammermill; Bird paper machine screens, Dirtecs; Combustion Engineering recovery boilers; General Electric turbo-generators; Goslin-Birmingham 6-body evaporator; Cascade evaporator; Diamond soot blowers; Cottrell precipitator; Dorr causticizing plant.

Honor Oxford Paper Co.

Oxford Paper Co., Rumford, Me., and its president and founder, Hugh J. Chisholm will be honored by the Newcomen Society in North America at the 1952 Maine luncheon of the society, December 12 in the Lafayette Hotel, Portland, Me. The Newcomen Society in North America is dedicated to improving relations between the U. S. and England and to honoring and preserving the best traditions of both. Mr. Chisholm is a member of the society's New York committee.

Hoberg Starts Up New No. 1 Machine

Features The Sunday Drive

A new Yankee Fourdrinier paper machine, designed for an ultimate running speed of 2000 feet per minute, was recently put into operation by Hoberg Paper Mills, Inc., Green Bay, Wis. The massive 178-inch Beloit machine, with auxiliaries, represents an investment of a million and a half dollars by the Hoberg firm. Thus far, production of the machine has been averaging 1500 feet per minute.

Housed in an impressive brick exterior building, the machine room has a beige tile interior. Another feature of the half million dollar building is its non-gravel, flat pre-cast concrete roof, the first such construction in this area. Badger Sheet Metal of Green Bay applied the built-up insulated Johns-Manville roofing on the 90 by 170 foot building. C. R. Meyer and Son of Oshkosh, general contractors on the project, designed the building with the assistance of the Hoberg engineering staff.

Hoberg personnel worked closely with Beloit on the design of the machine. All machine controls are set in consoles conveniently arranged and located for operators' use. There are no control valves or gauges on the machine itself. The machine is entirely air-controlled with five separate control bench boards. These govern Fourdrinier, press section, Yankee, reel and winder operations.

The Hoberg machine is the first completely new tissue machine equipped with a Beloit air-cushioned headbox. A motor driven compressor automatically maintains correct air pressure in the chamber. Distributor, headbox, and slice were built by Beloit as a complete assembly. The distributor is a cross-flow type with passages of shaped and fabricated stainless steel plate. Five rectifier rolls are employed. The main slice is fitted with a motor operated lift for adjusting the position of the slice lip. It is also fitted for adjustment to vary the degree of pressure formation.

The Beloit Fourdrinier is the latest in cantilever, non-shaking design. Wire changes can be effected without removing rolls or other Fourdrinier parts.

A maze-like wire pit was designed by Beloit in order to remove as much air as possible from white water. The water moves about an inclined base, passes around partitions and is dumped to the fan pump silo, where the fan pump gets suction to send additional stock to the headbox. A Stebbins tile stock chest with Impco agitation and Poirer consistency control is located on the same floor near the wet end of the machine.

The top couch assembly is air-operated for raising and lowering equipment. Diaphragm equipment regulates the nip pressure between top and bottom couches. The machine is equipped with suction press and suction pressure rolls. A two-stage Connersville vacuum pump is connected to the suction boxes of the two suction rolls.

The press section was designed to provide for future installation of a second suction press. Provision was also made for future automatic transfer equipment between wire and press felt.

A 12 ft. diameter Yankee dryer, powered by a 250 hp. motor, is the latest in Beloit high pressure design and is equipped with a Mid-West Fulton high speed condensate removal system. Creping and cleaning doctor holders are designed for convenient blade replacement. The doctor holders are fitted with electric motor oscillation drive with air cylinder pressure equipment.

A feature of the Yankee is the so-called "Sunday drive." Mason-Neilan controls keep the dryer revolving just enough to avoid water accumulation during shutdown periods. By maintaining low steam pressure, start-up time is reduced to a minimum. Steam pressure, water temperature to felt showers, and air temperature to the Yankee are controlled by M-N equipment.

Trim from the Yankee and winder go directly to a Shartle Bros. pulper located in the basement of the building. Here it is repulped and returned to the machine chest as stock.

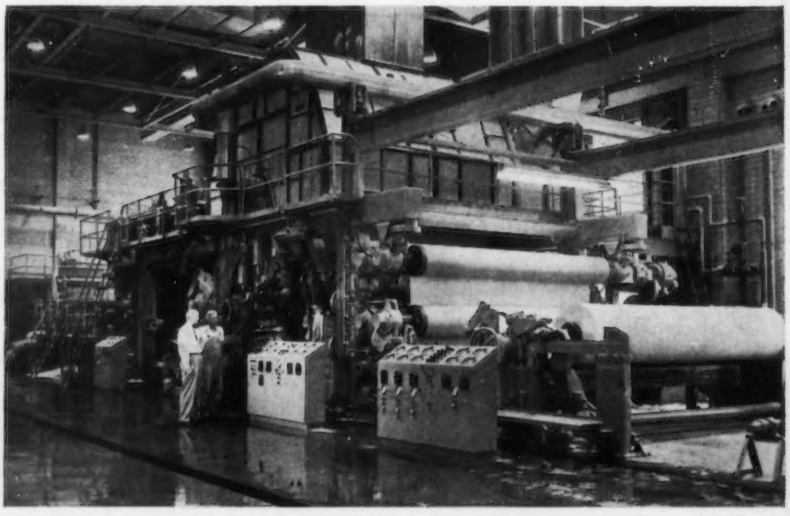
The machine has a Reliance sectional drive and electrical installations. An electrical gallery in an air-conditioned room just off the main basement, houses a 600 hp. Reliance synchronous motor. This motor powers three other Reliance generators all on a common shaft.

A Ruemelin dust collection system was installed at the dry end of the machine to alleviate lint conditions. A huge canopy extends over the winder to draw the dust into the system.

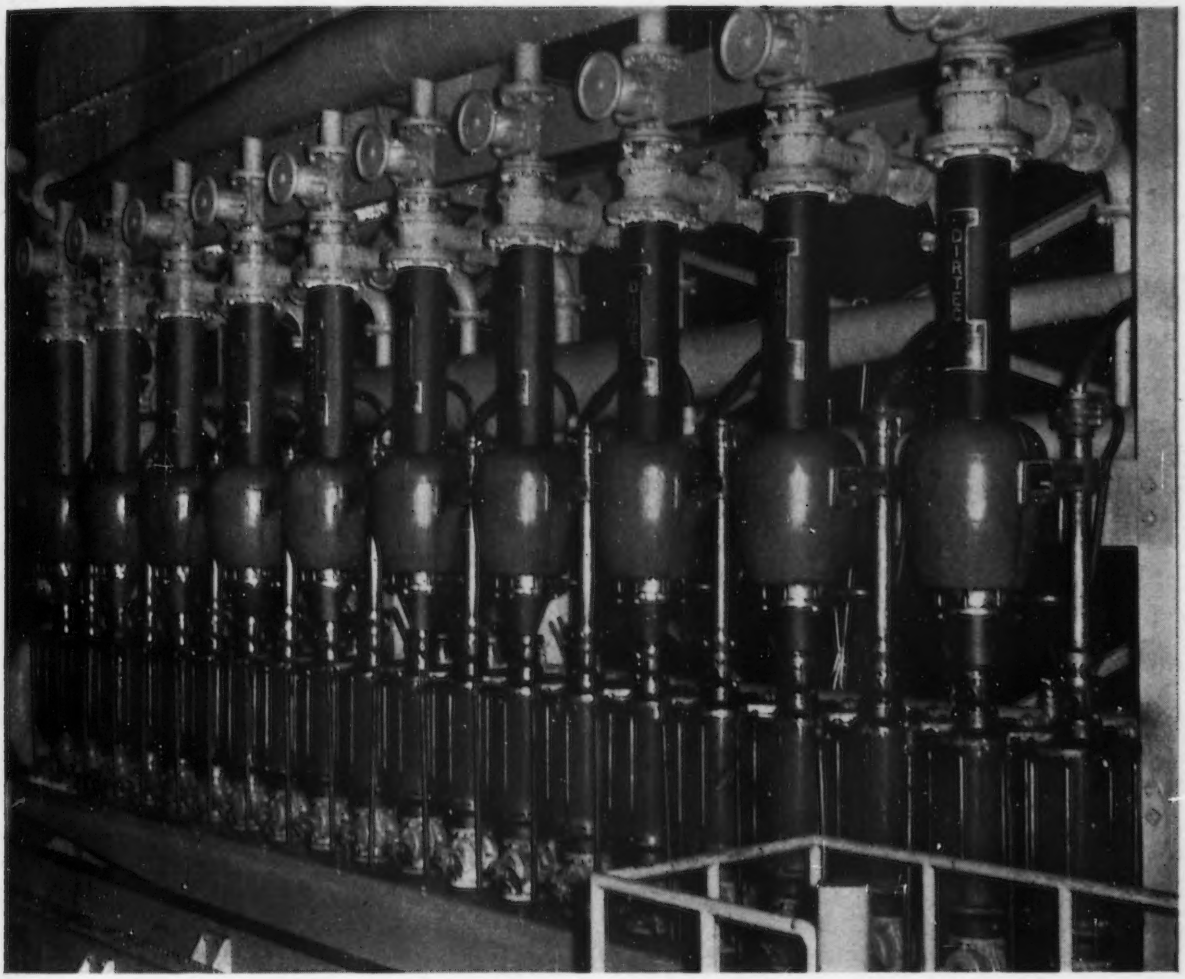
For heavy lifting jobs, a 20 ton P&H bridge crane is used. A smaller, three ton unit is used for lifting rolls from the reel to the rewinder.

Painted a soft green color to make it conducive to safe operation and to aid in general efficiency and good housekeeping, the machine presents a harmonious and pleasing appearance with the beige walls.

The new number one is the seventh machine in operation producing sanitary grade papers for Hoberg's Charmin and Evergreen retail items. It replaces the original number one which was retired from service nearly 20 years ago.



DIRTECS DO THE DIRT REMOVAL JOB *Right!*



The DIRTEC is a real piece of production machinery — an engineered unit designed and constructed in accordance with proved principles of hydraulics to achieve truly effective separation of dirt particles from paper stock.

DIRTECS are doing a wonderful job on all kinds and grades of stock as scores of papermakers will testify.

May we send you a Bulletin, prepare a layout or make an estimate?

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Statistical Control Course Scheduled

Fifty men of technical status in the paper industry will be enrolled in a special course in statistical control of paper production to be held from June 15 to June 25 at Western Michigan College, it was revealed at last week's meeting of the Kalamazoo Valley Section, Technical Association of the Pulp and Paper Industry.

Arrangements are being completed by Dr. Charles Butler, head of the Western Michigan mathematics department.

Instructors for the 10-day session will be Dr. Fred Beeler, Western Michigan College; Dr. Geoffrey Deale, University of Connecticut; and Dr. C. A. Bicking of the Army Ordnance Department, Washington. There will also be a staff of eight lecturers, including W. R. Purcell, Brown Co., Berlin, N. H., and O. H. Somers, Western Printing and Lithographing Co., Racine, Wis.

St. Regis Safety Record

The Electrical Dept. of St. Regis Paper Co., Bucksport, Me., has been congratulated on its outstanding Safety Record. The department worked 537,592 man hours through August 31, 1952 or 1,888 days, without a lost time accident. The company has also begun a new safety contest which will consist of posting safety slogans of maybe two or three lines on all bulletin boards throughout the mill. The slogan will be changed about two or three times a month. Just before publication of a new bulletin, two members of the safety committee will tour the mill, and from a prepared list of names —compiled from the employee's clock number to eliminate any bias in compiling it—individuals will be asked to recite, word for word, one of the slogans having previously appeared.

A.P.W.

ONLIWON

INDUSTRIAL
TOWELS
TISSUE

British Pulp Controls Eased for 1953

Freedom to import wood pulp without restriction from any source, including North America, is a feature of the licensing arrangements for the first half of 1953 announced by the British Acting Controller of Paper, H. G. Paul.

All Pulp Sources Open

Each producer of paper and/or cellulose wadding, it is stated, will now be given a single quota of expenditure, within the limit of which he may import as he may require for the period from January 1, 1953, to June 30, 1953, any grades of wood pulp (including knotter pulp and screenings) and any grades of pulp other than wood pulp, except bleached or partly bleached esparto or pulp consisting of any mixture of esparto and straw fibres. This quota will be on a c.i.f. United Kingdom port basis. The quota referred to above may be used without restriction by the holder for the purchase of pulp from any source (including North America).

Producers' quotas for the importation of pulp in accordance with these arrangements have, in general, been determined by reference to their actual consumption of each pulp grade for the six months' period July 1, 1951, to January 4, 1952. The total expenditure authorized for the importation of pulp and the descriptions referred to above in the six months' period to June 30, 1953, have beetn divided and allocated in proportion to that consumption.

Newsprint Requirements

In the case of producers of newsprint, an adjustment has been made where necessary on their consumption of strong sulphite pulp and mechanical pulp in the reference period to allow for any variation between their consumption and newsprint pulp in that period and their estimated consumption for the six months of 1953, based on their capacity for newsprint production as advised to the Newsprint Division of the Control for the Forty-First License Period.

Technical Papers

To producers of certain essential and more or less technical grades of paper, for the manufacture of which they have in the past few years been permitted regularly to import comparatively small quantities of specialty pulps from North America, the quotas have been increased appropriately to cover additional cost of importing quantities of these pulps in first half of 1953. The increase will approximate half the quantity of each description of such pulp which they have been licensed to import in the current year. Producers whose quotas have been increased on this account will be informed individually.

Exports and Straw

Importation of esparto pulp, or pulp consisting of a mixture of esparto and straw fibres, will be confined to established producers of Code 8 esparto papers who will be informed of the arrangements in this respect when they are advised of their esparto quota allocations for 1953.

It will be noted that the above arrangements make no provision for the importation of wood pulp from North America in the second half of 1953.

In view of the latitude which producers have been given to import wood pulp from North America in the first six months of 1953, and the impossibility of estimating the extent of the dollar expenditure which this arrangement may involve, determination of policy on imports of pulp from North America for the second half-year must be deferred until an assessment can be made of the dollar expenditure for the first half.

Second Half Predictions

However, producers who held import quotas for wood pulp from North America for 1953 can expect for the second half of 1953 to receive a dollar allocation which, calculated at present North American prides, would be sufficient to permit the importation of at least half the quantity of pulps other than unbleached kraft and one third the quantity of unbleached kraft which they were licensed to import during 1952.

More Southern Newsprint

It is reported that Southern Newspaper Publishers Assn. has instructed its newsprint mill committee to continue its efforts to attract new capital for construction of paper mills in the South and to continue its search for suitable sites.

Doors permit access to the Yankee Dryer inside the hood
Exhaust stack is of telescopic design to permit passage of crane up to Yankee Dryer area
Yankee Dryer bearings are located outside the dryer hood
Hood and exhaust system over predryers just ahead of Yankee Dryer
ROSS

ROSS *Air Systems*

at DETROIT SULPHITE PULP & PAPER CO.

the finest in air handling equipment

In keeping with the high standard of efficiency required of all equipment installed for DETROIT SULPHITE PULP & PAPER COMPANY, the ROSS Yankee Machine Hood and Air System embodies the newest features in design and operation. In addition to the features pointed out above the ROSS Air System, which is of the recirculating design, has a damper arrangement to permit adjusting the amount of recirculated and fresh air handled through the system.

We are justly proud of the important part assigned to ROSS Systems by DETROIT SULPHITE PULP & PAPER COMPANY—another of the industry's outstanding manufacturers.

ROSS SYSTEMS

J. O. ROSS ENGINEERING CORPORATION

MANUFACTURERS OF AIR PROCESSING SYSTEMS

444 MADISON AVENUE NEW YORK 22, N. Y.

BOSTON • DETROIT • CHICAGO • SEATTLE • LOS ANGELES

ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA

CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

PEOPLE

JAMES T. KIRKPATRICK has been appointed general sales manager of the Sutherland Paper Co., Kalamazoo, Mich.

Kirkpatrick is widely known in the industry through his previous positions as paraffined carton division sales manager and as assistant to the vice president. He has been directly concerned with packaging problems since 1938 and has been responsible for many innovations and improvements in the packaging field.

In his new position he will be in charge of Sutherland's sales policies and programs in all marketing divisions and will direct the activities of the company's extensive field sales force.

He succeeds R. F. Neff, Sr., who has resigned to devote his time to personal business.

G. WILLING PEPPER, vice-president and director of Scott Paper Co. has been named to head the company's Industrial Sales Division. This division remains under the general supervision of Francis W. Plowman, vice-president in charge of all distribution activities.

Mr. Pepper, who joined Scott in 1940 as treasurer and a member of the Board of Directors, replaces George H. Swatek who has resigned from the company to form a business of his own.

Fred L. Witt and **Howard R. Hvid** have been appointed assistant industrial sales managers coordinating sales activities throughout the country under Mr. Pepper's direction. Mr. Pepper will continue to act as a member of the company's executive staff directing procurement and correlating the operations of Scott's Soundview Division, Everett, Washington, with those of the general company program.

Mr. Witt came with Scott as an industrial salesman in 1939. He has been industrial district sales manager in New Haven-Hartford and Buffalo as well as a personnel assistant and employment manager at Scott's Chester, Pa. plant. He was assistant advertising manager from 1948 until he was made assistant to the sales vice president in 1951.

Mr. Hvid started with Scott in 1948 as an industrial salesman in Chicago. He has been Buffalo Industrial District Sales Manager since late in 1948.

WILLIAM McKENZIE, engineer at the Gould Paper Co. plant for the past five and one-half years, has resigned from the company and accepted a position with the Great Northern Paper Co., Millinnockett, Me. He will begin work there on Jan. 2.

CHARLES B. HAYS, only one of the original founders of the Watervliet Paper Co. still active in the affairs of the firm, recently celebrated his 90th birthday. He currently holds the office of vice-president of the firm.

W. O. HISEY, vice president and member of the Board of Directors of Sandy Hill Iron & Brass Works, is in Rome attending the Economic and Social Council of the United Nations meeting where a world-wide study is being made in the field of pulp and paper by the Food and Agricultural Organization of the United Nations. Mr. Hisey will act in a technical consulting capacity.

The purpose of the meeting will be concerned with advising the FAO on two important questions; the selection of simplified standard procedures for testing the pulping properties of tropical and sub-tropical woods of non-wood fibrous materials; and secondly the evaluation of existing processes for the production of pulp and paper on a commercial scale from tropical and subtropical woods and from non-wood fibrous materials.

It is believed that the opportunity provided at this meeting for technical discussions and exchange of information will be of considerable benefit to the Food and Agricultural Organization of the United Nations in guilding the efforts of its pulp and paper program.

C. S. "PAT" HERR has been elected vice-president in charge of Woods operations in the United States for Brown Co., according to an announcement made today by Laurence F. Whittemore, President and Chairman of the Board of Brown Co. and Brown Corp. Mr. Herr was elected to his new position at the last meeting of the Company's Board of Directors held recently in Toronto, Canada.

Mr. Herr joined Brown Co. as Chief Forester in 1943 and in 1945 was named resident Woods Manager.

G. H. TOMLINSON II, Research Director of Howard Smith Paper Mills Ltd. is in Rome, Italy, to attend a pulp and paper meeting organized and financed by the Food and Agricultural Organization of the United Nations.

Dr. Tomlinson will be the joint representative of the Canadian Pulp and Paper Industry and its Institute. The meeting is expected to last from December 3rd to 10. Dr. Tomlinson will be accompanied by his wife and is planning to make brief stops in Germany and England en route.

VINCENT J. CORACI, formerly president of Ace Broom Co., Brooklyn, N. Y., announces his entry into the waxed and converted paper field by being elected president of the Newark Paraffine & Parchment Paper Co., Newark Glassine Bag Co., and Protective Packaging Co. of Newark, New Jersey. Mr. Coraci announces that plans for substantial expansion of the facilities and products are being formulated.

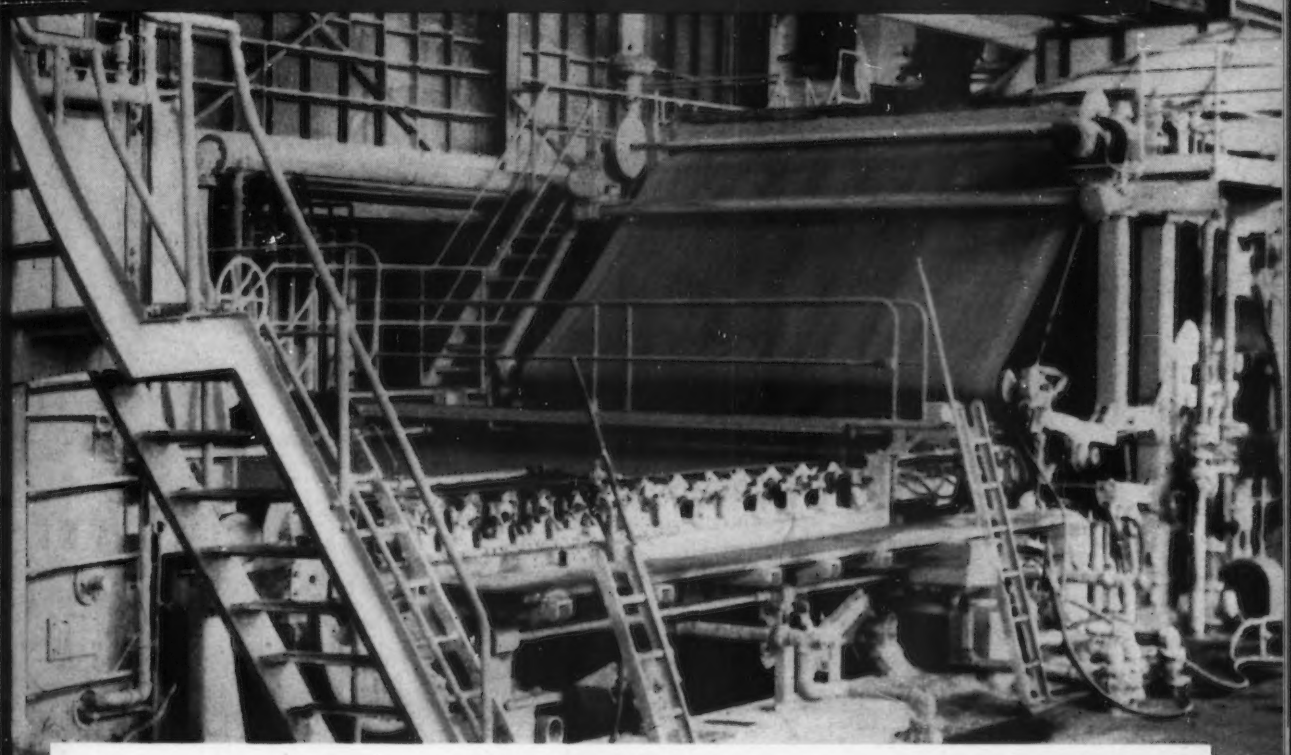
W. J. Eisner of New York City, president, and S. J. Eisner of Maplewood, N. J. secretary and treasurer of the foregoing companies, have retired from active participation in the companies.

DR. JOHN E. STONE, who was formerly with the National Research Council in Canada, joined the staff of the pulping and papermaking section of The Institute of Paper Chemistry on December 1. As a member of the staff of the Institute, Dr. Stone's activities will include teaching and research in the fundamental chemistry of pulping reactions.

BUD E. SIMONTON, formerly a plant superintendent for the St. Regis Paper Co., has been appointed superintendent of the Chase Bag Co. Toledo plant.

IN THE PAPER INDUSTRY

There's more to CORROSION than meets the eye



Sometimes VISIBLE...Often HIDDEN...Corrosion Strikes in Every Plant

This year, the Paper Industry will pay millions of dollars for needless losses created by corrosion ...*yet much of this corrosion may never be discovered* until it's too late to protect—and time to pay!

Corrosion is readily detected when it appears as rust layers or failing paint on exposed surfaces. But, by far, the major costs of corrosion come from hidden areas—where only minute inspections and constant care can prevent costly failures.

YOU LOSE IN A "WAITING GAME"

Don't wait for rust or other visible signs to appear. Visible or hidden, corrosion will destroy costly equipment... halt production... cause unnecessary maintenance shutdowns... and contaminate valuable products. Thus, corrosion dips deep into your profits as it creates needless losses totaling thousands of dollars.

YOU CAN PREVENT NEEDLESS WASTE

Check your plant for corrosion's presence. Double-check areas that may be vulnerable to *hidden corrosion*. If you would like help, an AMERCOAT Field Engineer will gladly assist you in making a thorough analysis. There is no obligation.

What is AMERCOAT?

AMERCOAT is a method of corrosion control. Not just a single product, but a complete LINE of coatings, individually formulated to solve or control specific industrial corrosion problems.

FOLLOW THE LINE OF MOST RESISTANCE... PROTECT WITH AMERCOAT

AMERCOAT CORPORATION

4809 FIRESTONE BLVD., SOUTH GATE, CALIFORNIA

CHICAGO, ILL. NEWARK, N. J. JACKSONVILLE, FLA. DALLAS, TEX.

George Amidon

Outlines Forestry Operations at Mando

The Minnesota and Ontario Paper Co.'s forestry program, based on the intensive management of individual areas, was outlined by George Amidon, M and O's director of forest management, at the forest management session of the joint convention of the Canadian Institute of Forestry and the Society of American Foresters in Montreal.

In a paper presented to the foresters of both nations, Mr. Amidon said that the size of the unit is the key to the problem of growing the most wood, and really intensive management requires sustained yield cutting plans for each individual operation.

Mr. Amidon feels this type of management can increase present U. S. and Canadian growth rates by three times or more and that the sustained growth for large areas of productive forest land, even in the comparatively slow growing timber types in Minnesota and Ontario, can reach one-half cord an acre annually, as compared with .15 cords on many lands now.

Small woodlots are readily adaptable to intensive management for two reasons, according to Mr. Amidon: (1.) Permanency of operation, (2.) Development of a network of roads.

"It is the thinking of M and O," Mr. Amidon said, "that if small woodlots can be managed for maximum sustained yield, the same principles can be applied to larger operations with the same success."

Because of this thinking, M and O's forestry operations are being patterned as nearly as possible after the woodlot type of operation. For some time now, M and O has been dividing its management districts into smaller sustained yield units. The size of these cutting units depends upon existing transportation facilities, type, age and condition of the timber and available labor supply.

As the company has presently worked this out, the cutting units vary from 500 acres for a small settler operation to about 60,000 acres for larger camp operations.

At the same time, Mr. Amidon refined the term "sustained yield" as follows: "Maximum sustained yield implies continuous production with the aim of achieving at the earliest practicable time and approximate balance by *species and management unit,* between net growth and harvest, either by annual or somewhat longer periods." He added that a cutting plan which permits overcutting of one species or one area and under cutting of other species or other areas is not good management, even though the cut is in balance with growth for all species over the entire area.

Several problems regarding the supply situation in the area where the company operates and which have an important bearing on the type of program developed were outlined by the speaker.

First of all, Mr. Amidon said, 75 percent of the forest land in M and O's immediate Minnesota operating area is in public ownership (state, county and federal) and more than 90 percent of the forest land in the Canadian operating area is owned by the Crown.

"It is evident," he added, "the company is dependent, to a large extent, upon public agencies for its supply of wood; there are certain definite limitations upon what M and O can and cannot do in the development of a forestry program, and the firm's forestry work must be closely coordinated with these governments' programs."

In Canada the company has long-term cutting rights and is required by the government to develop cutting plans, although the exact type is not specified. In Minnesota, the company owns the fee to blocks of timberland, but more than one-half of the timberlands within the firm's cutting areas are under state control and the company can obtain only short-term cutting rights on these lands. Cooperation with the state's plans is complicated by the fact that the state sells most of its timber at auction sales on two-year permits. In spite of this handicap, M and O has gone ahead with its planning in Minnesota in the hope that it can obtain cutting rights on state timber within the cutting areas where it has sufficient timber of its own to justify the major part of the development cost.

Another problem confronting the company is the shortage of spruce and the surplus of poplar in Minnesota and the present surplus of poplar and jack pine in the Canadian division's operating areas. This means that either M and O's mill needs must eventually be changed to conform to the quantities of the different woods available in our permanent wood supply area or the lands now growing species that are in surplus supply converted to the kind of trees that are in short supply.

Overabundance of mature wood is another problem. In the company's Canadian areas, a large percentage of the forest area contains mature and over mature wood and, therefore, Mr. Amidon said, the present surplus is for the most part of a temporary nature. The foresters' problem here is to gradually convert the timber types into a more balanced distribution of age classes. This is also a problem in Minnesota, but to a lesser degree, he added.

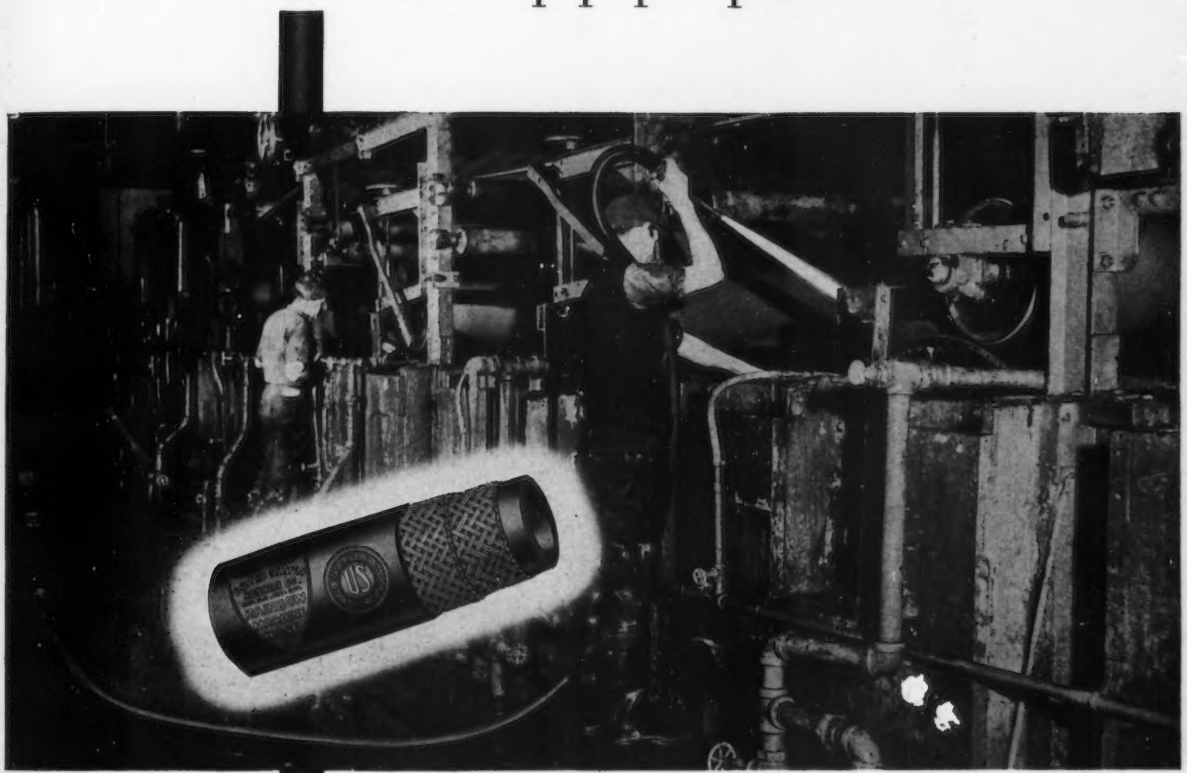
With the management districts established (five in Minnesota and four in Canada), M and O began dividing these districts into sustained yield cutting units. This work is not yet complete, Mr. Amidon said, but a good start has been made.

In Minnesota, about 30 sustained yield units have been established, and about 30 more such units are yet to be developed. These units vary in size from about 500 acres to 40,000 acres, Mr. Amidon said. And the annual cut for the first period of management varies from 50 cords to 7,000 cords. About half of the units are settler operations and the remainder is handled by small contractors. The average annual cut for the settler operations is about 400 cords and for the contractor operations, about 3,000 cords.

These sustained units, made up of both company-owned and company-controlled lands, supply at the present

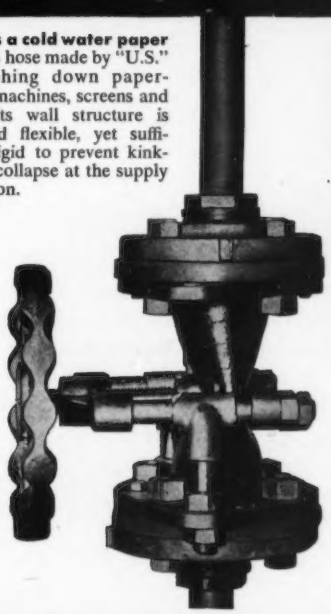
(Continued on page 48)

What's U. S. Rubber doing to help paper production?



Above is a cold water paper machine hose made by "U.S." for washing down paper-making machines, screens and floors. Its wall structure is light and flexible, yet sufficiently rigid to prevent kinking and collapse at the supply connection.

Custom made roll covering by "U.S." When your rolls need recovering, let U.S. Rubber engineers analyze operating conditions in your mill and check operating speeds, working pressures, and types of stock.



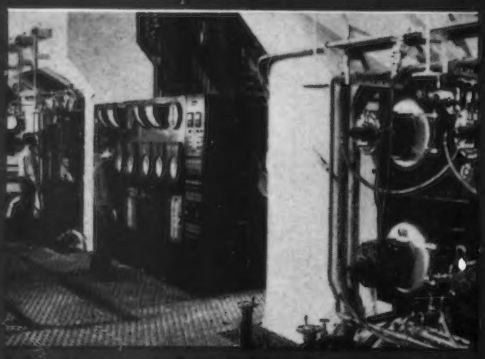
New rubber pinch valve (left) outwears metal when carrying abrasive or corrosive mixtures. It can be used in "cracked" position to control flow of paper pulp in paper processing. Its flexibility offsets misalignment in pipes, absorbs vibration, breaks up galvanic action. Compactly designed, requires remarkably little maintenance.

Shown here are just a few of the dozens of United States Rubber Company products that enable paper mills to turn out more work at less cost. "U.S." technicians are constantly studying *new* ways to make paper production more efficient. They like the challenge of unusual assignments. It will pay you to make use of the "U.S." advice and experience. Write to address below.

PRODUCT OF U.S. RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION, ROCKEFELLER CENTER, NEW YORK 20, N. Y.



More Power per fuel dollar—that's the basic business of Bailey Meter Company. Our products and services are designed to deliver increased power plant efficiency for you, whether your plant is large or small. We have had a wealth of experience on every size and type of steam generating equipment.

Here are some of the reasons why we believe we have more to offer you in this field than any other single manufacturer:

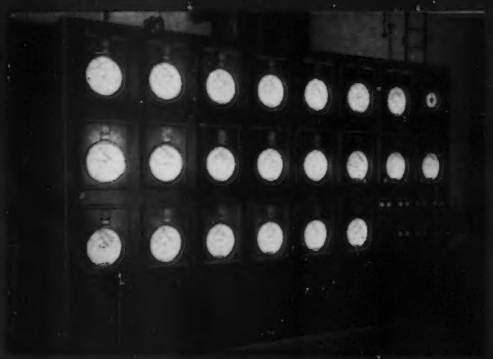
More Complete Range of Equipment

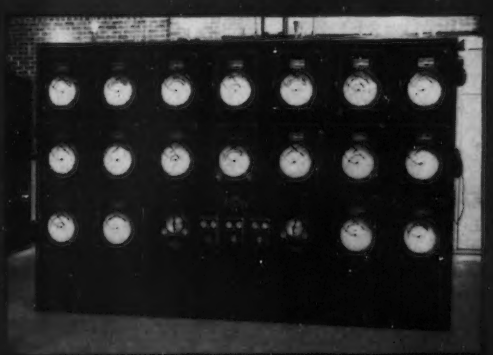
Our fully co-ordinated line of Meters and Controls is offered for a wide variety of services and in a complete range of types. This means you never worry that a Bailey Engineer's recommendation is slanted in favor of a particular type of equipment merely because he is unable to offer the exact one best suited to your needs. It means, too, that you need never fear a buck-passing division of responsibility for the efficient operation of your complete metering and control system.

More Experienced Engineering Service

When you discuss your power and process problems with a Bailey

Giving More Power to You





Engineer, you get advice from an organization with a background of more knowledge and experience in steam plant operation than any other manufacturer of instruments and controls can offer you. Our field representatives are graduate engineers with specialized training in combustion, flow measurement and automatic control. Each has completed an intensive course in theory and practice at our plant before being given a field sales-service assignment.

More Direct Sales-Service Offices

Bailey Meter Company's sales-service engineers are located in more industrial centers than those of any other manufacturer of boiler control systems. Truly, prompt and capable service—and with a minimum of travel time and expense—is as near as your telephone. In emergencies a trained Bailey Engineer is available in a matter of minutes or a few hours at the most.

Giving More Power to You

Better power plant operation calls for more power per fuel dollar, less outage, and safer working conditions. We help you to get all of these. Write for Bulletin 18 describing Bailey Meters and Control Systems.

Bailey Meter Company

Bailey Meter Company Limited, Montreal, Canada

The tough, flexible film formed by Methocel (Dow methylcellulose) has proved valuable as an inside sizing of fiber cartons and drums to assure a clean, lint-free surface. This is particularly important in the packaging of pharmaceuticals, foods and other products where contamination from lint must be avoided.

Methocel has also solved the problem of providing fiber drums that are easily parted from solidified products such as asphalt, rubber and waxes. The addition of Methocel to the coating formulation applied to the container board assures dependable, effective parting.

These and many other industry problems have been solved by Methocel as a specialty sizing, grease-resistant coating, adhesive and thickener. Consider Methocel in your operation for product and process improvement.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

Did you get your Experimental Sample?

The Dow Chemical Company
Department ME17B, Midland, Michigan

Wide viscosity range of Methocel available—please indicate use field_____

NAME_____ TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

DOW

L. Eberhardt[1]

Describes a Minor Revolution in Wood Use, It's So New, It's Startling!

Removal of Bark From Chips and Wood Pulp

Introduction

The pulp, paper, lumbering and allied wood using industries in the United States and Canada have expanded their total end product tonnage very rapidly since the beginning of World War II. This expansion, coupled with the increased tempo of research activities by educational, governmental and industrial organizations and the steadily increasing demands of labor, are creating a minor revolution in the use of wood.

The wood-using industries are faced with very serious conditions, a few of which are listed:

1. The raw material supply of wood remains constant and cannot be expanded to an appreciable extent immediately.
2. The rapidly increasing population of these countries demands an increasing volume of agricultural and forestry products. Food being more important, timber acreage declines are inevitable.
3. The quality of available pulpwood in most areas has steadily declined. The supply of desirable species decreases and costs go up.
4. Higher labor costs extend from the tree through the processing steps to the ultimate consumer.
5. Practically all segments of the industries require very high capital investment per unit of labor or end product. This occurs at a period when taxes take a prohibitive bite out of earnings and have decreased capital supply.

As a result of the above and other conditions, the industries have been forced to more efficient and extensive utilization of facilities, labor, and raw materials. Higher pulp yields, semi-chemical pulping, brown stock refining systems, and use of all forms of wood waste are becoming more and more common throughout the industries. Fortunately, research has kept ahead of economic necessity except in some phases of wood waste utilization.

This paper deals predominately with a portion of only one of these economic problems: the bark removal phase in the upgrading of low-cost waste and low-grade raw materials into high grade pulp and paper end products, for which conventional barking systems are not well suited.

Two Developments Described

Two new developments that will remove bark and other dirts incident to utilization of such materials are submitted. The first development, a shaker-aspiration method for removal of bark from chipped wood; and the second, the Centri.Cleaner for removal of bark and other dirts from pulps.

It might well be asked, "Why use both methods if either is effective?" End-product quality and the chemical requirements of the cooking operation are the two predominant factors requiring bark removal. Obviously, the degree of cleanliness in the finished product and the cost of cooking determine the dirt and bark removal problem and the equipment required.

In some cases where the end products are high grade white papers, both methods would probably be utilized. On the other hand, on insulation boards, hardboards, saturating felts, and some container boards, only partial removal of bark from the chips by the aspiration method would meet quality requirements.

The Centri.Cleaners will remove dirt after pulping, but where chemical cooking liquors are used it is questionable economics to use expensive chemicals to cook bark, which has a high chemical demand, and produces only a small yield and fiber. It appears preferable to get rid of the cheaply-removed bark before cooking, keeping the overall costs competitive, and to use Centri.Cleaners to provide end product quality. A balance between equipment cost, bark percentage, chemical costs and ultimate fiber yield must be established on each contemplated project.

Largest Losses in Wood Yield

Two of the largest losses in wood yield per acre of woodland are: (1) approximately 35 percent of wood volume left in the woods in the form of cull wood, undersize and crooked stocks, limbs, and (2) the slabs, trim, and edgings from sawmill operations.

Modern forestry practice of sustained yield tree farming has also created the often serious problem of utilizing thinnings from immature stands.

The waste materials above have several common features that create difficulty in their use. The most pertinent are as follows:

1. Their bark content is frequently high when compared with the volume of wood. In some cases, bark has been found to be 40 percent of the total.
2. Conventional equipment for handling in the woods, transportation to the mill and processing is inadequate and cannot be adapted on these special raw materials.
3. They are usually in an inconvenient form at an inconvenient location for the potential user.

The cooperation of government agencies, wood utilization companies, and equipment manufacturers has led to the development of several excellent and practical portable chippers that can be taken into the woods or to the sawmill site. This development has been followed by successful chip air handling systems, and equipment for transportation of chips by truck, rail and barge to the mill site.

These developments have reduced the difficulties in the utilization of the above forms of wood waste. But before the chipped material can be used for practically any end-product, from insulation and hardboards or roofing felts, to the better grades of bleached and unbleached pulps and paper, the high-bark content generally should be greatly reduced.

Bauer Bros. Co. personnel in their contacts with nearly all the various types of wood utilization industries became interested in the bark removal problem. The interest was accelerated when the company obtained the manufacturing rights for the Centri.Cleaner developed by the Howard Smith Paper Mills and the Hammermill Paper Co. The Centri.Cleaner was acquired primarily to widen the field of

[1] Bauer Bros. Co., Springfield, Ohio.
[*] Presented before the South-Eastern Technical Committee, American Pulpwood Assn., Savannah, Ga.

application of disc refiners in the high yield field. This development which does an excellent job of removing bark and other dirt from pulp and paper made the company aware of the acuteness of the bark problem.

Over a period of many years the company had accumulated a very wide experience with separation problems in other industries utilizing air flotation, cyclone separators, air aspirators, screen classifiers, and combinations of these methods to affect many different types of classification of materials.

Investigate Bark Removal Requirements

An investigation was made to determine the requirements of a commercially practical bark removal system and the following objectives appeared mandatory:

1. Equipment must remove bark from chips under year round operating conditions in which all variations of moisture content of bark and wood could be handled with minimum adjustment and operator attention.

2. Bark removal should be as complete as practicable. Five percent of bark remaining in the cleaned chips appeared to be the minimum allowable for most pulps.

3. Bark should be as dry as possible to obtain maximum heat value in burning. This factor eliminates consideration of a wet process.

4. Equipment should be simple and relatively inexpensive, with a minimum of maintenance, labor and power expense in operation.

5. The equipment must perform satisfactorily on a variety of chip forms and sizes from most wood species and various mixtures of species.

6. The separation process should provide an end product suitable for production of quality pulp. Treatment that reduced the paper-making qualities of the pulp by fiber degradation would be undesirable.

7. Wood losses in bark fractions should be below those experienced on conventional bark removal equipment.

When the above objectives were outlined, an extensive research project was undertaken. Preliminary work concentrated on air flotation methods but the idea was soon discarded as unworthy due to the failure of this method to provide good separation where the specific gravity of bark and wood was fairly close. Also the method would not produce good results where the material was wet or stringy.

The Sizing Operation and Equipment

During the work on air flotation tables, it was found that a sizing operation was required before an effective separation of bark could be made from the chips. This sizing operation accomplishes the following very essential effects:

1. The woody material is reduced to a uniform size, chip cards, slivers, knots, and oversize material are broken down.

2. Bark is knocked loose from the chips and granulated or reduced in size. Barks of the various species react differently in that some, being friable, shatter and others become fibrous or stringy.

3. Specific surface of bark is decreased below that of chips.

Several machines including conventional Hammermills, shredders and single disc mills were tried on this operation and it was found that the first two gave a characteristic chopping action that produced poor quality pulp due to the drastic cutting action on the chips. The material after the single disc mill, while it produced good quality pulp after cooking, was too fibrous for good bark separation. A conventional slow speed impact breaker was modified for the special requirements of the application and produced the desired results.

Fig. 1 indicates the machine used for the sizing operation. The machine operates at slow speed (450 to 900 r.p.m.) with very heavy swing drubbers and grate bars. Construction of the machine is very rugged to meet the heavy duty requirements of this particular job. Power requirements are not high and end product results are excellent. *Fig. 2* indicates an installation of the machine.

The composite material of chips and bark is fed into the bark drubber with a specially designed feeder which distributes and drops the material down onto the drubbers. The heavy drubbers throw the material against the impact breaker section behind the opening, reducing the material with a shattering impact action until size of the material is reduced to a point where it will pass through the widely spaced grate bars.

It might be pointed out that the bark drubber will reduce practically any piece of wood that can be introduced through the feed opening including sticks 3 inches in diameter or 2 x 4's several feet long.

It should also be emphasized that the purpose of this operation is not to produce a fibrous, shredder, or greatly reduced material but is to produce a uniformly sized material in chip form for the next operation.

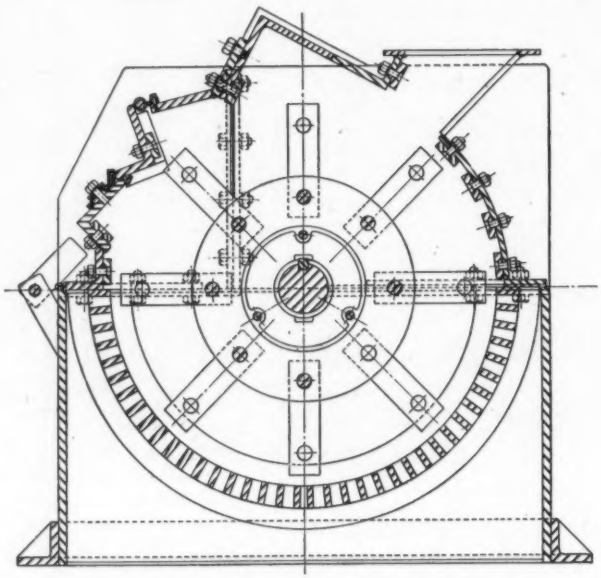
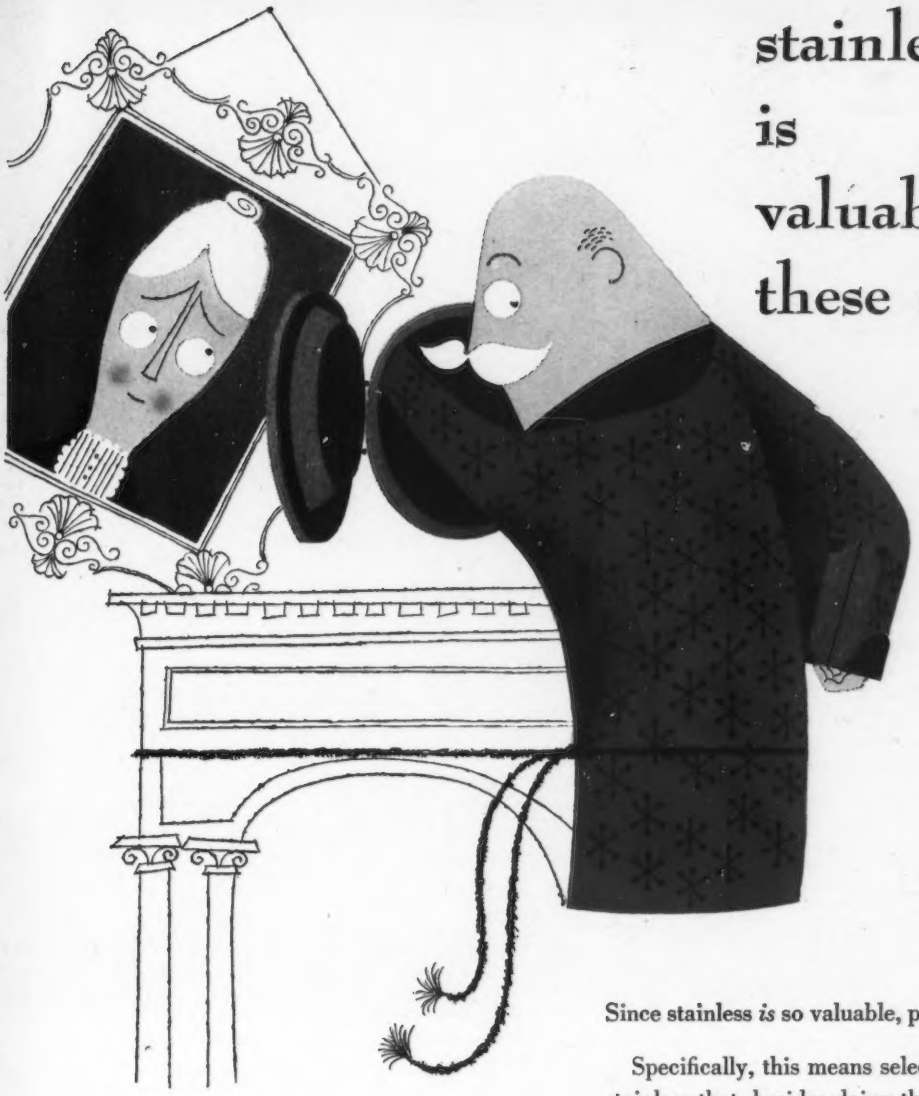


Figure 1—Cross-section Drawing of New Chip Drubber.

The Bark Separation

The bark separation is accomplished on a double deck shaker screen equipped with an air aspiration hood. The chips are fed uniformly to the top shaker deck which is equipped with a fairly coarse screen plate. The material then passes through to the fine screen on the lower deck. On the lower deck the fine material, which is predominantly bark and sawdust, drops through. The fraction remaining on the screen is segregated by the screen action with chips finally floating to the top to be scalped off by the air aspiration hood. The material passing the



stainless is valuable these days

Since stainless *is* so valuable, plan to make it go further.

Specifically, this means selecting a grade or finish of stainless that, besides doing the job adequately, will be in less demand than one you have been figuring on.

Here is where Crucible can help you out. The matchless experience of our metallurgists and stainless fabricating specialists can help you get the most out of your share of stainless.

Call upon us to help you.

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking

STAINLESS STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REZISTAL STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

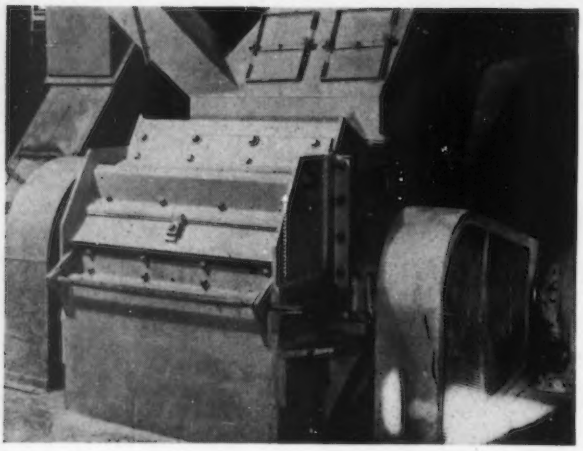


Figure 2—Installation View of New Drubber

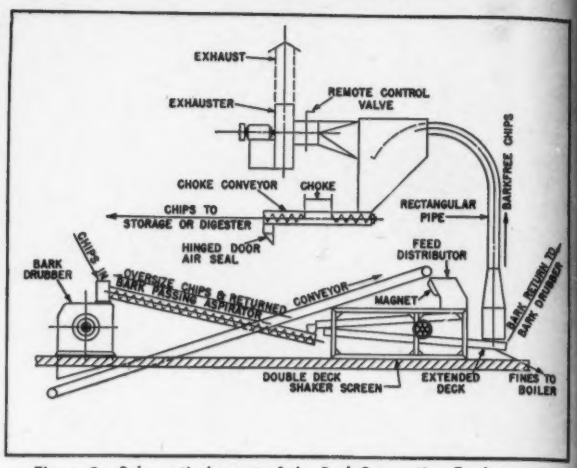


Figure 3—Schematic Layout of the Bark Separating Equipment (Patent Applied For)

aspirator hood on the screen deck is predominantly bark.

The oversize material from the top screen deck and the material from the lower deck which passes the aspirator hood is returned to the bark drubber for further treatment.

Fig. 3 indicates the flow diagram of the complete bark removal system previously described in detail.

A plant layout to handle a daily production of 100 tons (dry basis) would require the following connected horsepower:

1. Bark Drubber—50 h.p.
2. Shaker Aspirator—15 h.p.
3. Cyclone Collectors—75 h.p.
4. Conveyors, feeders, etc.—15 h.p.

The system has performed satisfactorily on the following types of material:

White Oak—Fresh Cut
Red Oak—Fresh Cut
Red Oak — Fresh Cut Soaked in Water 3 days
Southern Pine—Fairly Dry
Southern Pine—Thoroughly Soaked
Wisconsin Poplar Slabs—Fresh Cut and Extremely Wet
Mixed Hardwood Slabs (Beech, Birch, Maple) Fresh Cut
Mixed Hardwood Slabs and Edgings (Predominately Oaks and Maple)
Mixed Hardwood Slabs and Edgings (From Portable Chipper)
Maine White Pine Sawmill Waste (From Portable Chipper)

The only unsatisfactory performance occurred on green Western White Fir slabs and edgings that contained a very stringy resinous inner bark. Removal of bark was hampered due to the material tending to roll up into gummy stringy wads.

Table I indicates typical results obtained utilizing green Red Oak for the trial. These trials were run on commercial sized equipment at the Fiber Products Laboratory, Springfield, Ohio. Other materials listed above provide similar results to those indicated in *Table I*. It is necessary, however, to do extensive work on each individual material to determine optimum operating conditions. This applies particularly to size screens used on the shaker, degree of sizing performed in the bark drubber, and aspirator hood adjustments.

The Laboratory has proven the method very effective on a few of the many pulpwood species. Considerable development, improvement, and investigation are required before the actual potential of the method can be evaluated and the process perfected. This work is continuing and will be supplemented by two or more 100-ton commercial installations shortly after the first of the year. It is expected that actual mill testing and continuous operation over a considerable period will lead to a complete system adequate in all respects to mill operating conditions.

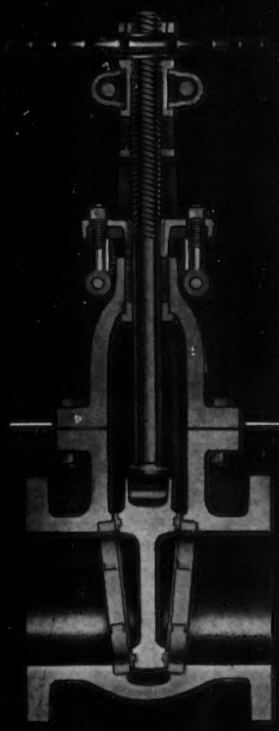
It is impossible with the described method to remove the bark without some wood loss in the bark fractions. This is, of course, the case with all types of conventional barking equipment. Drum barkers, hydraulic barkers, and post peelers all remove considerable good wood with the bark. It is the writer's opinion based on experimental results that the described method will provide a lower percentage of wood loss per cord than conventional barking equipment.

Two very distinct advantages of this method of bark removal, when compared with conventional methods, are quite obvious. First, all conventional equipment is directed toward removal of the bark from the log. Diameters of the logs processed must be maintained between rather narrow limits and crooked or cull wood cannot be handled. This development which debarks chips widens the field to include anything which can be chipped. This allows the pulp mill to utilize the enor-

Table I
RESULTS OBTAINED ON GREEN RED OAK CHIPS—NOTE I.

Operation	Sizing Fraction	% of Total Input	% Dry Basis Wood in Fraction	% Dry Basis Bark in Fraction	Disposal of Fraction
After Chipping	+⅞	50.6	88.4	11.6	
	+½	45.5	81.8	18.2	To Bark Drubber
	—½	3.9	2.7	97.3	
Above Material After Bark Drubber *Note 2.*	+⅞	11.9	87.0	13.0	To Chip Supply
	+½	15.7	24.5	75.5	Discarded
	—½	3.4	17.4	82.6	Discarded *Note 4.*
	Aspirator	69.0	96.0	4.0	To Chip Supply
Same as Above Except	+1	1.0	83.5	16.5	Returned to Drubber
+⅞ & +½ Fractions	+½	5.0	54.3	45.7	Returned to Drubber
Recycled to Drubber for Continuous Operation *Note 3.*	—½	9.5	19.6	80.4	Discarded
	Aspirator	84.5	96.5	3.5	To Chip Supply

NOTE 1. Original material composed of 80% wood containing 22.1% moisture and 20% bark containing 14.0% moisture.
NOTE 2. On this run top screen equipped with ⅞" diameter perforations, lower screen ½" dia.
NOTE 3. On this run top screen eqiupped with 1" diameter perforations, lower screen ½" dia.
NOTE 4. System end products this run. Yield per O.D. ton processed.
Discarded Fractions—382 lbs. containing 88 lbs. wood
Retained Fractions—1618 lbs. containing 86 lbs. bark
Approx. 75% bark removal with 5.7% loss good wood



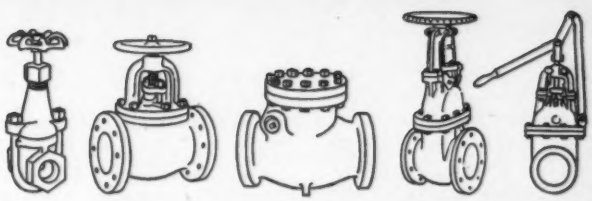
IRON

COMPLETE LINES OF IRON VALVES AND PIPE FITTINGS are manufactured by Walworth in a variety of types, pressure ratings, sizes, and patterns for general industrial use.

Walworth also manufactures complete lines of valves (including Lubricated Plug Valves), and pipe fittings made of steel, bronze, and special alloys.

These valves and pipe fittings, plus Walworth-made pipe wrenches total approximately 50,000 items and are sold through distributors in principal centers throughout the world.

Walworth engineers will be glad to help you with your problems. For further information call your local distributor, nearest Walworth sales office, or write to Walworth Company, General Offices, 60 East 42nd Street, New York 17, New York.



Iron valves in gate, globe, angle, check, and lubricated plug types are manufactured by Walworth. Illustrated is a sectional view of a Walworth No. 726F Standard Iron Body, Bronze Mounted, Wedge Gate Valve with flanged ends. This line of valves is available in sizes 2 to 30 inches. Similar valves of All-Iron type are also available.

WALWORTH

Manufacturers since 1842

valves . . . pipe fittings . . . pipe wrenches

60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

mous tonnages of low cost material now either wasted or impossible to handle due to form. Sawmill waste, logging waste, thinnings, output of portable chippers, are thus made available to the pulp mill. This economic advantage should be of increasing interest to the mills as wood procurement problems and cost increase.

Secondly, the bark removed by the process contains no added water. The fuel value of the bark provides a considerable saving over bark obtained from processes using water. In this process the bark can be burned advantageously; in some others the BTU value is not high enough to evaporate the water added in barking; in the latter case a potentially good fuel actually costs money to burn.

Discusses Conventional Equipment

It is not the intention of this paper to indicate that conventional barking equipment is made obsolete by this development. There are, however, very many places where conventional equipment has definitely proven inadequate; in some of these cases conventional equipment may be replaced. In a majority of cases especially those where wood is required in stick form, such as for groundwood, conventional equipment cannot be replaced.

It is conceivable, however, that conventional equipment may be supplemented by this or similar processes by utilizing them as auxiliaries in situations where conventional equipment is either inadequate or inefficient. An example of this would be a barking system on hardwoods where the barkers were adequate during the peeling season but could not keep up during the non-peeling periods, due to the requirements of recirculation of partially peeled logs. The logs could be put through the barkers once, then chipped regardless of the amount of bark still on the log, the bark being removed later from the chips.

It is also conceivable that some mills whose wood supply is predominately the oak species with barks high in tannins could economically extract the tannins from barks obtained by this method. Where low cost oak slabs and edgings with a high bark to wood ratio were utilized, the economics of a tannin extract system might prove particularly advantageous.

The information presented above on the air aspiration method of bark removal from chips is the result of extensive experimental work. The material provided is more of an interim report on an experimental project that appears to have considerable merit, than a report on a finished commercial product.

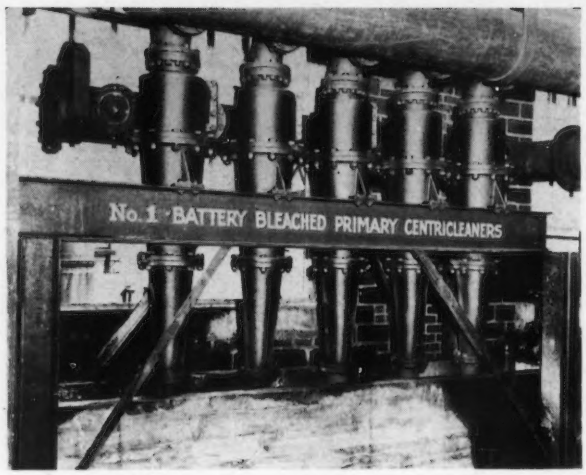


Figure 4—Two-pass Centri•Cleaner Installation

The information that follows regarding the Centri.Cleaner for removal of bark and dirt from pulp represents and demonstrates a development that has been tried and proved in commercial operation. The Centri.Cleaner can be recommended for mill applications without reservations.

The Centri.Cleaner

The Centri.Cleaner is essentially nothing more than a long tapered cone into which the stock to be cleaned is pumped through a tangential inlet at the large diameter. A vortex action in the cone provides a separation according to the specific surface and specific gravity of the fibers and particles in the stock. The clean fiber is discharged at the outlet located at the center of the cone's top or large diameter, the dirt, bark and specks being rejected continuously out the cone's small diameter.

Rastatter and Croup of the Hammermill Paper Co. and Drs. George Tomlinson, II, and Max Tuck of Howard Smith Paper Mills, Ltd., have presented papers published in Tappi Magazine and the proceedings of the Canadian Technical Association within the past six months. These papers describe the Centri.Cleaner, development, theory and application in considerable detail.

Figure 4 pictures a two pass Centri.-Cleaner installation consisting of five 4″ x 4″ primary Centri.Cleaners handling approximately 45 tons per day each of soda pulp directly after the knotter screen, a secondary 4″ x 4″ unit is used to reduce the fiber loss to less than one half percent of the original material. The clean stock from the secondary unit is recycled.

Figure 5 indicates the flow sheet of the operation of Centri.Cleaners as applied before and after bleaching in a soda pulp mill. Relevant data pertaining to pressure, flow rates, consistencies, and material balances are indicated in *Table II*. In this case, wood used was peeled poplar. *Table III* indicates the same data on unpeeled poplar.

In this particular case, the unbleached stock primary cleaners are operated at zero outlet pressure as they are delivering to a thickener situated on the same floor. All other units are

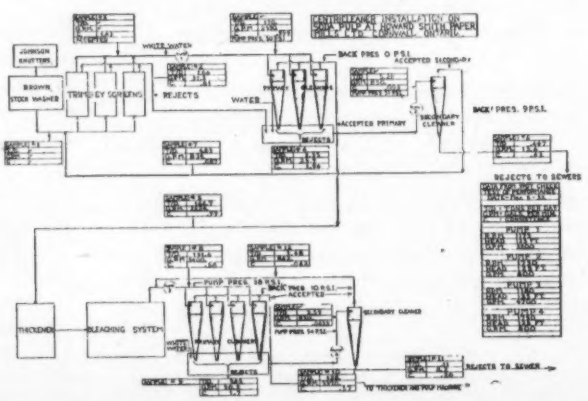


Figure 5—Flow diagram of Centri•Cleaners Operating Before and After Bleaching in Soda Mill

MAKING A CHECK. Sinclair Rubilene shows complete separation from water.

Fine, smartly-designed fibre rugs made by the Deltox Rug Company are favorites with budget-wise consumers from coast to coast. The Deltox plant, in Oshkosh, Wis., generates its power with an Ames 4-cyl. Uniflow Steam Engine, shown here.

At first, this engine was giving Deltox engineers trouble with sludging and oil emulsification in the circulating system. Then, about a year ago, Deltox changed to Sinclair RUBILENE® Oil Medium. The gauge glass was watched vigilantly, but there was no evidence of emulsification or developing sludge.

Besides ending emulsification and sludging, the subsequent yearly overhaul showed practically no valve cam or bearing wear; and carbon deposits in the valve gearing were negligible. Furthermore, a check of past records showed a cut of 19% in make-up oil.

Are you getting full satisfaction from the circulating systems in your plant? Perhaps a Sinclair Engineer can save you maintenance and operating expense. Get in touch with your nearest Sinclair Representative, or write to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR OILS for circulating systems

Table 2

OPERATING DATA AND MATERIAL BALANCE ON SODA MILL STOCK SYSTEM: WOOD USED—PEELED POPLAR

	Rotary Screens	Unbleached Stock Centri. Cleaners Primary	Unbleached Stock Centri. Cleaners Secondary	Bleached Stock Centri. Cleaners Primary	Bleached Stock Centri. Cleaners Secondary
Number of units in parallel	3	3	1	4	1
Pressure across cleaners, p.s.i.—Inlet	...	47	54	58	54
Outlet	...	0	7	10	7
Accepted stock flow, U. S. g.p.m.	...	2520	recycles	3320	recycles
Accepted stock consistency, %	1.53	1.23	0.15	0.85	0.082
Accepted fibre lb./min. (M.F.)	...	260	recycles	237	recycles
Rejection orifice diameter, inches	...	1 5/8	1 3/4	1 3/8	1 3/8
Rejected stock flow, U. S. g.p.m.	25.1	22.5	8.4	26.2	5.9
Rejected stock consistency % (M.F.)	1.25	2.58	0.56	2.30	0.32
Recycled solids, lb./min.	...	7.04	...	4.84	...
Recycled solids, % of accepted	...	2.7	...	2.04	...
Rejected solids, lb./min.	...	...	0.39	...	0.157
Rejected solids, % primary accepted	...	...	0.15	...	0.066
Rate of production during period of test, tons a.d. pulp/day	...	218	...	190	...

delivering the accepted stock to the higher floors and are, therefore, operating with a corresponding back pressure. The pressure differential imposed on the units was in all cases greater than 45 p.s.i. When a pressure is imposed on the accepted pulp line, a smaller rejects orifice is normally used.

Approximately 2 percent of the solid material going to the Centri-Cleaners was rejected from the primary units; most of the fiber was recovered in the secondary units with the losses from the latter as percent of primary accepted stock, being 0.15 percent at the unbleached stage, and 0.066 percent at the bleached stage.

During the period of this test, the production rates were 208 tons/day at the bleached stage. These were the stock flow rates at the time of this particular test and merely indicate the rate of transfer of stock from the brown stock washer in the one case, and from the final bleaching tower in the other case. Depending on the level of the stock in the blow pit, the rate will be increased or decreased from time to time. The average production during the month in which these tests were taken was 156 tons/day.

It was decided that operation of the mill during the interim period between the installation of the Centri.Cleaners and the operation of the new bleach plant should be directed towards a maximum production. However, separate test runs have been made in the mill investigating the results obtained under unorthodox operating conditions, such as by-passing all screens or using low alkali charge; or using rough wood, to establish the capabilities of the Centri.Cleaner system; and it may be of interest to show results from one of these tests.

Data obtained during a run with poplar, without removal of bark before digestion, are presented in Table III. Of special interest are the higher consistencies of the secondary rejects which were 2.05 percent for the unbleached stock, 0.69 percent for the bleached stock, as contrasted with the corresponding values of 0.56 percent and 0.32 percent for pulp from peeled wood as previously shown in *Table II*. Thus, when the input stock is heavily loaded with dirt, the consistency of the rejected stock automatically goes up and normally no adjustment or attention is required.

Table 3

OPERATING DATA AND MATERIAL BALANCE ON SODA MILL STOCK SYSTEM: WOOD USED—UNBARKED POPLAR

	Rotary Screens	Unbleached Stock Centri. Cleaners Primary	Unbleached Stock Centri. Cleaners Secondary	Bleached Stock Centri. Cleaners Primary	Bleached Stock Centri. Cleaners Secondary
Number of units in parallel	3	3	1	5	1
Pressure across cleaners, p.s.i.—Inlet	...	47	51	62	50
Outlet	...	0	0	13	7
Accepted stock flow from cleaners, U. S. g.p.m.	...	2520	recycles	4250	recycles
Accepted stock consistency, %	1.76	0.75	0.12	0.44	0.064
Accepted fibre, lb./min. (M.F.)	...	159	recycles	156	recycles
Rejection orifice diameter, inches	...	1 5/8	1 3/4	1 3/8	1 3/8
Rejected stock flow, U. S. g.p.m.	...	33.6	11.8	24.0	9.7
Rejected stock consistency % (M.F.)	...	3.00	2.0	1.98	0.69
Recycled solids, lb./min.	...	6.4	...	3.4	...
Recycled solids, % of accepted	...	4.0	...	2.2	...
Rejected solids, lb./min.	...	...	2.02	...	0.56
Rejected solids, % primary accepted	...	...	1.3	...	0.36
Rate of production during period of test, tons a.d. pulp/day	...	127	...	125	...

With the unbarked wood, the secondary rejection as a percentage of the primary accepted stock amounted to 1.3 percent at the unbleached stage and 0.36 percent at the bleached stage, for a total of 1.66 percent, contrasted with a total of 0.22 percent when using peeled wood. The percentage of fiber remaining in the secondary rejects from both unbleached and bleached cleaners is so low when running rough wood that it is impossible to make a self-supporting hand-sheet. The dirt count from individual hourly tests on the final pulp sheet during this run ranged from zero to a high of 4, with individual shifts showing average values of 2 and 1.

The dirt count as given here represents the equivalent black area in square millimeters on an area of 500 square inches on each side of the sheet, particles having an area of 0.05 square millimeters being counted. The sheet is inspected wet, by transmitted light using strong illumination: It has been quite apparent from this and other tests that through the use of Centri.-Cleaners, pulp of exceptional cleanliness can be obtained with unbarked wood when using the alkaline process.

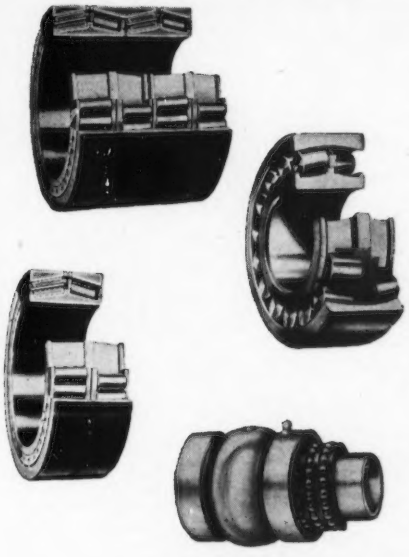
The above information regarding Centri.Cleaner operation at the Howard Smith Paper Mills is extracted from a paper previously presented by Drs. George Tomlinson, II, and Max Tuck of Howard Smith Paper Mills, Ltd.

In closing the writer would like to point out that the Centri.Cleaner development is proven commercially, and many mill installations are operating quite successfully and many more are contemplated. The bark removal system is at the point of commercial installation and field trial. Several installations will be in operation in the coming year. It is not suggested that the two described processes and methods are the ultimate answer to the bark removal problem; but they are certainly big steps toward a solution of this increasingly acute problem.

Research and semi-commercial testing facilities are available for complete evaluation of either of the described methods at the Fiber Products Laboratory, Springfield, Ohio.

I wish to thank Drs. George Tomlinson, II, and Max Tuck for permission to utilize material from their excellent paper. All the materials and help provided by the cooperation of Tony Horstman and other members of the Fiber Products Laboratory staff are greatly appreciated.

it takes experience...



Torrington has had many years of experience in the manufacture and application of all types of anti-friction bearings. It knows the advantages of each bearing and the requirements of almost every kind of mechanical equipment. Thus, manufacturers and users of everything from hand tools to rolling mills have learned to rely on Torrington for improved bearing performance.

Next time you have a friction problem, call your nearest Torrington office. They will be glad to help you select the bearing best suited to your application.

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

Bids and Awards

GPO 1st Quarter, 1953 Paper Needs

WASHINGTON — Bids were received on December 8 by the Joint Congressional Committee on Printing for paper for the use of the Government Printing Office for a three-month period beginning January 1, 1953. Awards, announced December 15, are indicated by asterisks (*) before the names of the successful bidders in the tabulation herewith.

Newsprint

No. 2—2,000,000 lbs., 24x36—64; rolls, 23, 34½, and/or 46 ins. wide; diameter, 37 ins. min., 39 ins. max. (returnable 3-inch iron or metal-capped fiber cores to be furnished by the contractor); min. order, 40,000 lbs.

Bermingham & Prosser Co.	$.063215
Walter D. Peek, Inc.	.065
* Perkins Goodwin Co.	.0620
Frank Parsons Paper Co., Inc.	.0632

Machine-Finish Book

No. 5—1,400,000 lbs., 25x38—70; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.

Bermingham & Prosser Co. (750,000 lbs. only)	$.1344
Frank Parsons Paper Co., Inc.	.1284
Barton, Duer & Koch Paper Co. (250 Tons only)	.1307
Mudge Paper Co.	.1286
The Mead Sales Co.	.1255
Walker Goulard Plehn Co.	.1219
* Wilcox-Walter-Furlong Paper Co.	.1196

No. 6—20,000 lbs., 25x38—70; rolls, 9½ ins. wide; diameter, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 10,000 lbs.

* The Mead Sales Co.	$.1298

No. 7—345,000 lbs., 25x38—70; rolls, 19, 28½, and 38 ins. wide, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 40,000 lbs.

The Mead Sales Co.	$.1133
Walker, Goulard Plehn Co.	.1077
Bermingham & Prosser Co.	.1145
Barton, Duer & Koch Paper Co.	.1226
Mudge Paper Co.	.1176
* Wilcox-Walter-Furlong Paper Co.	.1029

No. 9—100,000 lbs., 25x38—70; rolls, 22, 23, 33, 34½, 44 and 46 ins. wide, 37 ins. min., 39 ins. max. (returnable 3-inch iron or metal-capped fibre cores); min. order, 10,000 lbs.

The Mead Sales Co.	$.1133
Bermingham & Prosser Co.	.1145
Mudge Paper Co.	.1176
* Wilcox-Walter-Furlong Paper Co.	.1029

English-Finish Book

No. 12—125,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins., max. length, 56 ins.; min. order, 20,000 lbs.

* Barton, Duer & Koch Paper Co.	$.1270
Stanford Paper Sales Corp.	.1310

Machine-Finish Book End Paper

No. 16—40,000 lbs., 25x38—160; flat, cut 38x50 ins.; min. order, 20,000 lbs.

Barton, Duer & Koch Paper Co.	$.1317
* Bermingham & Prosser Co.	.1209
Wilcox-Walter-Furlong Paper Co.	.1241

Offset Book

No. 17—550,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

* Bermingham & Prosser Vo.	$.1384
Frank Parsons Paper Co., Inc.	.1300
* Walker, Goulard Plehn Co. (70,000 lbs.)	.1377
* Walker, Goulard Plehn Co. (70,000 lbs.)	.1383
Walker, Goulard Plehn Co. (70,000 lbs.)	.1389
Walker, Goulard Plehn Co. (70,000 lbs.)	.1395
Walker, Goulard Plehn Co. (70,000 lbs.)	.1401
Walker, Goulard Plehn Co. (70,000 lbs.)	.1407
Walker, Goulard Plehn Co. (70,000 lbs.)	.1413
Walker, Goulard Plehn Co. (balance)	.1427
Howard Paper Mills (Aetna Paper Div.)	.1487

No. 18—4,300,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

* R. P. Andrews Paper Co. (1,000,000 lbs.)	$.1149
* R. P. Andrews Paper Co. (500,000 lbs.)	.1186
* R. P. Andrews Paper Co. (500,000 lbs.)	.1214
* The Whitaker Paper Co. (300,000 lbs.)	.1219
The Whitaker Paper Co. (2,300,000 lbs.)	.1249
Mudge Paper Co. (750 tons only)	.1352
Bermingham & Prosser Co. (1,000,000 lbs. only)	.1236
* Central Ohio Paper Co. (500,000 lbs. only)	.1208
Frank Parsons Paper Co., Inc. (2,000,000 lbs. only)	.1279
Walker, Goulard Plehn Co.	.1273
* Stanford Paper Sales Corp. (500,000 lbs. only)	.1135
Howard Paper Mills (Aetna Paper Div.—1,000,000 lbs. only)	.1328
The Mead Sales Co. (600,000 lbs.)	.1329
* Fitchburg Paper Co. (1,000,000 lbs. only)	.1137

No. 19—80,000 lbs., 25x38—100; flat, cut 8x10½ ins.; the grain to run the 10½ inch way; min. order, 40,000 lbs.

* The Whitaker Paper Co.	$.1319
Bermingham & Prosser Co.	.1364
Walker, Goulard Plehn Co.	.1373

No. 20—670,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

R. P. Andrews Paper Co. (200,000 lbs. only)	$.1129
The Whitaker Paper Co.	.1194
Mudge Paper Co.	.1352
Bermingham & Prosser Co.	.1214
Central Ohio Paper Co.	.1185
Walker, Goulard Plehn Co.	.1273
Howard Paper Mills (Aetna Paper Div.)	.1328
The Mead Sales Co.	.1329
* Fitchburg Paper Co.	.1129

No. 21—100,000 lbs., 25x38—160; flat, cut 34½x44 and 38x53 ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

R. P. Andrews Paper Co.	$.1179
The Whitaker Paper Co.	.1194
Bermingham & Prosser Co.	.1213
Central Ohio Paper Co.	.1185
Walker, Goulard Plehn Co.	.1273
Howard Paper Mills (Aetna Paper Div.)	.1328
* Fitchburg Paper Co.	.1129

Opacified Offset Book

No. 22—170,000 lbs., 25x38—120; flat, cut 21x32 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

Cauthorne Paper Co., Inc.	$.1354
* Central Ohio Paper Co.	.1297
Walker, Goulard Plehn Co.	.1749
Stanford Paper Sales Corp.	.1342
Howard Paper Mills (Aetna Paper Div.)	.1524

Antique Book

No. 24—100,000 lbs., 25x38—90; flat, cut 32x42, and 38x50; min. order, 40,000 lbs.

* R. P. Andrews Paper Co.	$.0965
Barton, Duer & Koch Paper Co.	.1295
The Whitaker Paper Co.	.1225
Mudge Paper Co.	.1200
Bermingham & Prosser Co.	.1213
Paper Corp. of United States	.1115
Walker, Goulard Plehn Co.	.1123
Wilcox-Walter-Furlong Paper Co.	.1075
Stanford Paper Sales Corp.	.1096

No. 25—50,000 lbs., 25x38—120; flat, cut 32x42, 38x48, and 38x50 ins.; min. order, 20,000 lbs.

* R. P. Andrews Paper Co.	$.0965
Barton, Duer & Koch Paper Co.	.1295
The Whitaker Paper Co.	.1199
Mudge Paper Co.	.1151
Bermingham & Prosser Co.	.1213
Paper Corp. of United States	.1100
Walker, Goulard Plehn Co.	.1123
Wilcox-Walter-Furlong Paper Co.	.1114
Stanford Paper Sales Corp.	.1065

50% Antique Book

No. 30—100,000 lbs., 25x38—80; flat, cut 27x40¾, 31½x46½, and 38x48 ins.; min. order, 20,000 lbs.

* The Whitaker Paper Co.	$.1939
Paper Corp. of United States	.1984
Walker, Goulard Plehn Co.	.2069
Wilcox-Walter-Furlong Paper Co.	.2130
Howard Paper Mills (Aetna Paper Div.)	.2055

No. 31—20,000 lbs., 25x38—80; shall be suitable for writing on with ink; flat, cut 22¾x31 ins.; min. order, 20,000 lbs.

* The Whitaker Paper Co.	$.1939
Paper Corp. of United States	.1984
Walker Goulard Plehn Co.	.2069
Wilcox-Walter-Furlong Paper Co.	.2130
Howard Paper Mills (Aetna Paper Div.	.2055

Water Resistant (Text) Book

No. 34—500,000 lbs., 25x38—120; flat, cut 32x42 and 35x45 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

The Whitaker Paper Co. (150,000 lbs. only)	$.1729
* Paper Corp. of United States	.1701
Stanford Paper Sales Corp.	.1725

Supercalendered Book

No. 36—350,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 20,000 lbs.

Mudge Paper Co.	$.1257
Walker Goulard Plehn Co.	.1199
* The Mead Sales Co.	.1188

No. 37—500,000 lbs., 25x38—90; rolls, 19, 28½ and 38 ins. wide, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 40,000 lbs.

R. P. Andrews Paper Co.	$.1043
Mudge Paper Co.	.1123
Walker Goulard Plehn Co.	.1099
* Wilcox-Walter-Furlong Paper Co.	.1027
The Mead Sales Co.	.1063

Coated Book

No. 39—1,750,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 40,000 lbs.

* Frank Parsons Paper Co., Inc. (400,000 lbs. only)	$.1210
Walker Goulard Plehn Co.	.1389
* Stanford Paper Sales Corp. (600,000 lbs. only)	.1158

No. 40—200,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.; min. order, 40,000 lbs.

Frank Parsons Paper Co., Inc.	$.1210
Walker Goulard Plehn Co.	.1389
* Stanford Paper Sales Corp.	.1154

Goldenrod Coated Book

No. 42—5,000 lbs., 25x38—160; flat, cut 38x50 and 42x58 ins.; min. order, 2,000 lbs.

The Whitaker Paper Co.	$.1978
* Bermingham & Prosser Co.	.1970

No. 43—250,000 lbs., 25x38—140; flat, cut 32x42, 38x48, 39x50, and 42x64 ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

The Whitaker Paper Co.	$.1539
Walker Goulard Plehn Co.	.1407
* Stanford Paper Sales Corp.	.1389

Litho Coated Book

No. 46—120,000 lbs., 25x38—140; flat, cut 32x42, 35x45, 38x48, 39x50, and 41x52 ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

The Whitaker Paper Co.	$.1590
* Walker Goulard Plehn Co.	.1559
Stanford Paper Sales Corp.	.1695

Dull Coated Book

No. 47—20,000 lbs., 25x38—140; flat, cut 32x42 and 38x48 ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

* Walker Goulard Plehn Co.	$.1677

MOST calenders are equipped with FARREL® ROLLS

There are a number of very good reasons why more calenders are equipped with Farrel rolls than all other makes added together.

For example, in designing a roll, Farrel engineers are guided by a century of experience in determining the proper combination of metal formula and depth of chill to assure *maximum service life.*

The chilled section is sufficiently hard and deep to resist crushing and abrasion. The structure of the body provides the strength to carry the load on the roll in the service for which it is designed.

Surface hardness prolongs accuracy of the roll face, and, as a result, lengthens the time between regrindings. Correct depth of chill means that the roll may be reground many times before its usefulness is ended.

These are the reasons why Farrel rolls last so long. For the complete story of these rolls, send for a copy of Bulletin No. 116. No cost or obligation.

FARREL-BIRMINGHAM COMPANY, INC. • Ansonia, Conn.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Akron, Chicago, Los Angeles, Houston

F8-781

Ground Wood Mimeograph Paper

No. 49—30,000 lbs., No. 40; flat, cut 32½x42½ ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.

Boston Paper Board Co.	$.1300
* Frank Parsons Paper Co., Inc.	.1029

Chemical Wood Mimeographed White and Colored

No. 50—550,000 lbs., white, No. 40; flat, cut 28½x34½, 32½x42½, 38x48½. Grain: size 28½x34½ ins. to run the 28½ inch way; size 32½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way; min. order, 40,000 lbs.

R. P. Andrews Paper Co.	$.1095
Barton Duer & Koch Paper Co.	.1122
The Whitaker Paper Co.	.1179
Mudge Paper Co.	.1128
Butler Co.	.1119
Frank Parsons Paper Co.	.1085
Walker Goulard Plehn Co.	.1119
* Stanford Paper Sales Corp.	.1084

No. 51—595,000 lbs., No. 40; flat, cut 8x10½ ins.; grain 10½ inch way; min. order, 40,000 lbs.

R. P. Andrews Paper Co.	$.1178
Barton Duer & Koch Paper Co.	.1297
The Whitaker Paper Co.	.1279
Cauthorne Paper Co., Inc.	.1233
Butler Co.	.1189
Boston Paper Board Co.	.1300
* Walker Goulard Plehn Co.	.1174
Wilcox-Walter-Furlong Paper Co.	.1186
Stanford Paper Sales Corp.	.1251

No. 52—65,000 lbs., blue, buff, green, pink and yellow, No. 40; flat, cut 32½x42½, and 38x48½ ins. Grain: size 32½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way; min. order, one color, 10,000 lbs.

* Bermingham & Prosser Co.	$.1425

25% Mimeograph

No. 53—80,000 lbs., No. 40; flat, cut 28½x34½, 32½x42½, 38x48½, and 40½x42½ ins. Grain: size 28½x34½ ins. to run the 28½ inch way; size 32½x42½ ins. and 40½x42½ ins. to run the 42½ inch way; size 38x48½ ins. to run the 38 inch way; min. order, 20,000 lbs.

R. P. Andrews Paper Co.	$.1399
Paper Corp. of United States	.1581
Walker Goulard Plehn Co.	.1417
* Howard Paper Mills (Aetna Paper Div.)	.1393

No. 54—90,000 lbs., No. 40; flat, cut 8x10½ ins.; grain 10½ inch way; min. order, 40,000 lbs.

R. P. Andrews Paper Co.	$.1449
Paper Corp. of United States	.1681
Walker Goulard Plehn Co.	.1462
Stanford Paper Sales Corp.	.1526
* Howard Paper Mills (Aetna Paper Div.)	.1433

Duplicator Copy Paper Liquid Process, White and Colored

No. 57—200,000 lbs., white; No. 40; flat, cut 32x42, 34x44 and 40x52½ ins.; the grain to run lengthwise of the sheet; min. order, 40,000 lbs.

The Whitaker Paper Co.	$.1479
Mudge Paper Co.	.1443
Eastern Corp.	.1333
* Walker Goulard Plehn Co.	.1223
Fitchburg Paper Co.	.1224

No. 58—125,000 lbs., No. 40; flat, cut 8x10½ ins.; grain 10½ inch way; min. order, 40,000 lbs.

The Whitaker Paper Co.	$.1579
Cauthorne Paper Co., Inc.	.1463
Eastern Corp.	.1460
Boston Paper Board Co.	.1500
* Walker Goulard Plehn Co.	.1348

No. 59—35,000 lbs., pink, yellow, green and blue, No. 40; flat, cut 32x42, 34x44 and 40x52½ ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.

* Walker Goulard Plehn Co.	$.1530

Chemical Wood Writing White and Colored

No. 61—240,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins.; max. width 48 ins.; min. order, 40,000 lbs.

Barton Duer & Koch Paper Co.	$.1502
Bermingham & Prosser Co.	.1303
Ancram Paper Mills	.1520
* Frank Parsons Paper Co., Inc.	.1294
Walker Goulard Plehn Co. (1/3 of amount)	$.1297
Walker Goulard Plehn Co. (1/3 of amount)	.1298
Walker Goulard Plehn Co. (Balance)	.1299
Wilcox-Walter-Furlong Paper Co.	.1470
Bulkley Dunton & Co., Inc.	.1305

No. 62—2,900,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.

* R. P. Andrews Paper Co. (1,800,000 lbs.)	$.1059
Barton Duer & Koch Paper Co. (250 tons only)	.1272
* The Whitaker Paper Co. (800,000 lbs.)	.1062
The Whitaker Paper Co. (700,000 lbs.)	.1097
The Whitaker Paper Co. (700,000 lbs.)	.1122
The Whitaker Paper Co. (700,000 lbs.)	.1147
Mudge Paper Co. (500 tons only)	.1417
Graham Paper Co. (600,000 lbs. only)	.1300
Frank Parsons Paper Co., Inc.	.1392
* Walker Goulard Plehn Co. (400,000 lbs.)	.1095
Walker Goulard Plehn Co. (500,000 lbs.)	.1096
Walker Goulard Plehn Co. (500,000 lbs.)	.1097
Walker Goulard Plehn Co. (500,000 lbs.)	.1098
Walker Goulard Plehn Co. (500,000 lbs.)	.1099
Walker Goulard Plehn Co. (500,000 lbs.)	.1119
The Mead Sales Co. (900,000 lbs.)	.1383

No. 64—3,300,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.

* R. P. Andrews Paper Co. (1,800,000 lbs.)	$.1029
Barton Duer & Koch Paper Co. (300 tons only)	.1100
Barton Duer & Koch Paper Co. (500 tons only)	.1247
* The Whitaker Paper Co. (900,000 lbs.)	.1031
The Whitaker Paper Co. (900,000 lbs.)	.1081
The Whitaker Paper Co. (900,000 lbs.)	.1099
The Whitaker Paper Co. (600,000 lbs.)	.1124
Mudge Paper Co. (500 tons only)	.1358
Butler Co. (600,000 lbs.)	.1100
Bermingham & Prosser Co. (500,000 lbs.)	.1090
Bermingham & Prosser Co. (500,000 lbs.)	.1115
Frank Parsons Paper Co., Inc.	.1332
Walker Goulard Plehn Co. (500,000 lbs.)	.1087
Walker Goulard Plehn Co. (500,000 lbs.)	.1089
Walker Goulard Plehn Co. (500,000 lbs.)	.1091
Walker Goulard Plehn Co. (500,000 lbs.)	.1093
Walker Goulard Plehn Co. (600,000 lbs.)	.1097
Walker Goulard Plehn Co. (500,000 lbs.)	.1099
Walker Goulard Plehn Co. (200,000 lbs.)	.1105
* Stanford Paper Sales Corp. (1,600,000 lbs.)	.1034
The Mead Sales Co. (800,000 lbs.)	.1324

No. 65—100,000 lbs., white, No. 40; flat, cut 8x10½ ins.; min. order, 40,000 lbs.

* R. P. Andrews Paper Co.	$.1169
The Whitaker Paper Co.	.1181
Walker Goulard Plehn Co.	.1246
Bulkley Dunton & Co., Inc.	.1286

No. 66—550,000 lbs., white, No. 32; rolls, min. width 16 ins., max. width 48 ins., diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.

* R. P. Andrews Paper Co.	$.0975
Barton Duer & Koch Paper Co.	.1167
Mudge Paper Co.	.1218
Bermingham & Prosser Co.	.1050
Frank Parsons Paper Co., Inc.	.1259
Walker Goulard Plehn Co.	.0977
The Mead Sales Co.	.1259

No. 67—40,000 lbs., white, No. 32; rolls, min. width 21 ins., max. width 46 ins.; diameter, 37 ins. min., 39 ins. max. (returnable 3-inch iron or metal capped fiber cores); min. order, 20,000 lbs.

The Whitaker Paper Co.	$.0993
Bermingham & Prosser Co.	.1050
* Walker Goulard Plehn Co.	.0977

No. 68—300,000 lbs., white, No. 40; rolls, min. width 16 ins., max. width 48 ins., diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.

Barton Duer & Koch Paper Co.	$.1142
The Whitaker Paper Co.	.0969
Mudge Paper Co.	.1186
Bermingham & Prosser Co.	.1010
Frank Parsons Paper Co., Inc.	.1199
Walker Goulard Plehn Co.	.0967
* Stanford Paper Sales Corp.	.0919
The Mead Sales Co.	.1199

No. 69—100,000 lbs., No. 40; rolls, min. width 21 ins., max. width 46 ins., diameter, 37 ins. min., 39 ins. max. (returnable 3-inch iron or metal-capped fiber cores); min. order, 20,000 lbs.

The Whitaker Paper Co.	$.0969
Bermingham & Prosser Co.	.1010
Walker Goulard Plehn Co.	.0967
* Stanford Paper Sales Corp.	.0919

No. 70—50,000 lbs., blue, buff, green, pink, salmon and yellow, No. 26; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

Ancram Paper Mills	$.1625
Eastern Corp.	.1570
* Frank Parsons Paper Co., Inc.	.1400
Walker Goulard Plehn Co.	.1444

No. 71—400,000 lbs., blue, buff, green, pink, salmon and yellow, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

* Bermingham & Prosser Co.	$.1188
Eastern Corp.	.1485
Walker Goulard Plehn Co.	.1199

No. 72—355,000 lbs., blue, buff, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.

* Bermingham & Prosser Co.	$.1160
Eastern Corp.	.1426
Walker Goulard Plehn Co.	.1173
Bulkley Dunton & Co., Inc.	.1232

No. 73—40,000 lbs., yellow, No. 32; rolls, 32 and 38 ins. wide, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.

* Bermingham & Prosser Co.	$.1125
Eastern Corp.	.1385
Walker Goulard Plehn Co.	.1129
The Mead Sales Co.	.1358

No. 74—120,000 lbs., white, No. 32; rolls, 36 ins. wide; diameter, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 40,000 lbs.

* Eastern Corp.	$.1259
Walker Goulard Plehn Co.	.1336

No. 76—30,000 lbs., white, No. 24; rolls, 22 ins. wide, diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 40,000 lbs.

Eastern Corp.	$.1386
Frank Parsons Paper Co., Inc.	.1354
Walker Goulard Plehn Co.	.1372
* The Mead Sales Co.	.1352

No. 77—20,000 lbs., white, No. 30; rolls, 22 ins. wide; diameter, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.

Eastern Corp.	$.1284
* Frank Parsons Paper Co., Inc.	.1260
Walker Goulard Plehn Co.	.1354
The Mead Sales Co.	.1297

No. 78—65,000 lbs., blue, green, pink, yellow, buff, cherry and salmon, No. 24; rolls, 22 ins. wide, diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, one color, 10,000 lbs.

* Frank Parsons Paper Co., Inc.	$.1457
The Mead Sales Co. (Rejected)	.1451

50% Lithographed-Finish Map

No. 83—40,000 lbs., No. 32; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.

Barton Duer & Koch Paper Co.	$.2400
* Paper Corp. of United States	.1981
Stanford Paper Sales Corp.	.2220
Howard Paper Mills (Aetna Paper Div.)	.2027

No. 84—35,000 lbs., No. 40; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.

Barton Duer & Koch Paper Co.	$.2300
Cauthorne Paper Co., Inc.	.2313
* Paper Corp. of United States	.1924
Stanford Paper Sales Corp.	.2180
Howard Paper Mills (Aetna Paper Div.)	.2002

No. 86—66,000 lbs., No. 56; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.

Barton Duer & Koch Paper Co.	$.2250
Cauthorne Paper Co., Inc.	.2246
* Paper Corp. of United States	.1841
Stanford Paper Sales Corp.	.2140
Howard Paper Mills (Aetna Paper Div.)	.1962

High Wet Strength Map

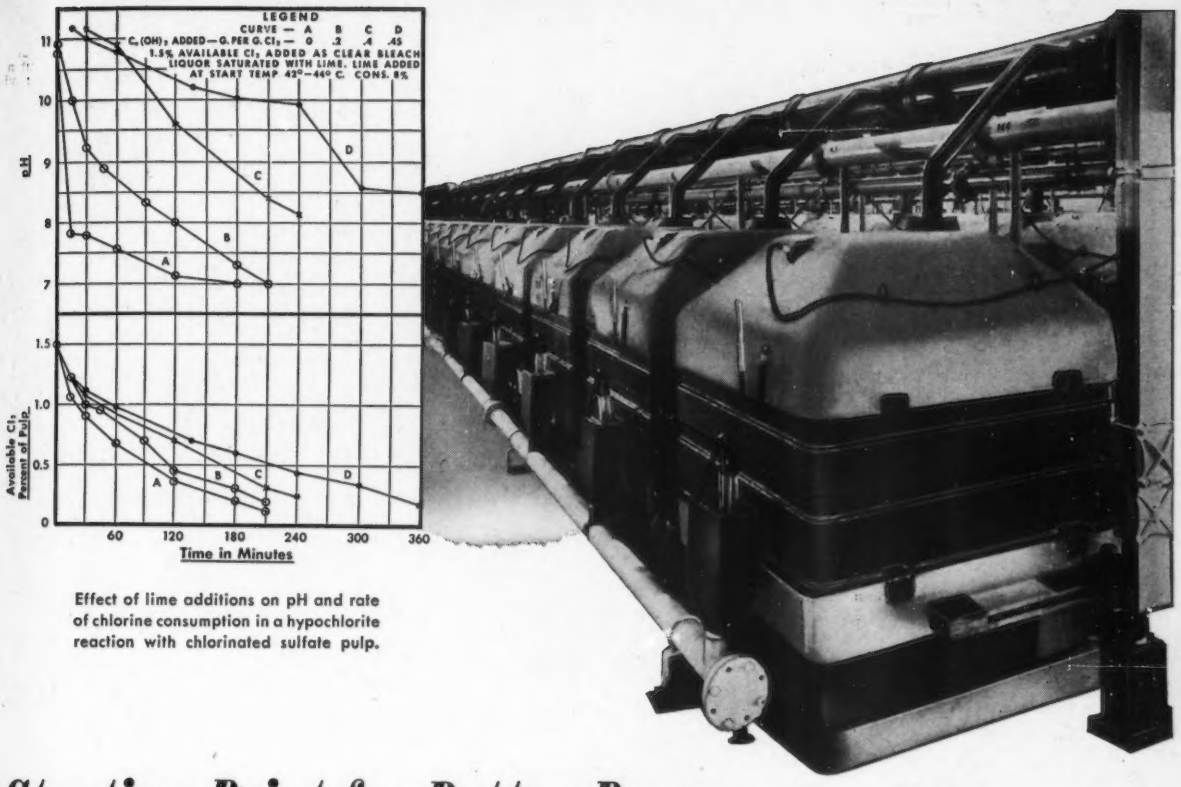
No. 88—631,300 lbs., No. 48; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet, unless otherwise specified (omit ream markers); min. order, 10,000 lbs.

Barton Duer & Koch Paper Co.	$.1525
Cauthorne Paper Co., Inc. (200,000 lbs.)	.1546
Cauthorne Paper Co., Inc. (200,000 lbs.)	.1596
Paper Corp. of United States	.1670
Walker Goulard Plehn Co.	.1750
Stanford Paper Sales Corp.	.1590
* Fitchburg Paper Co.	.1484

50% White Chart, Lithograph-Finish

No. 89—103,400 lbs., No. 72; flat, cut any size, min. width 22 ins., max. width 46 ins.; the grain to run lengthwise of the sheet unless otherwise specified (omit ream markers); min. order, 10,000 lbs.

Barton Duer & Koch Paper Co. (50,000 lbs. only)	$.2100
Old Dominion Paper Co.	.2392
* Paper Corp. of United States	.1916
Stanford Paper Sales Corp.	.2020



Effect of lime additions on pH and rate of chlorine consumption in a hypochlorite reaction with chlorinated sulfate pulp.

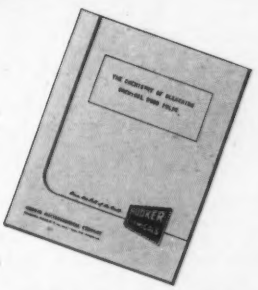
Starting Point for Better Paper

The important bleaching step, at many mills, is handled with high-purity chlorine produced in Hooker "S" Cells at Niagara Falls and Tacoma.

So efficient are the "S" cells, that their widespread use by licensees and by Hooker is responsible for nearly one-half of the chlorine produced in the United States.

When you use Hooker Chlorine you can be sure of uniformity that keeps your bleaching methods constant. What's more, you can depend upon properly conditioned and inspected tank cars to insure trouble-free unloading and handling. Technical Service by Hooker assures you of experienced advice on the efficient, safe handling of chlorine and other Hooker Chemicals.

For copies of interesting and informative papers on bleaching listed here, please write on your business letterhead.



Send for This Helpful Bleaching Data

Bulletin No.

201 Process and Equipment for Making Bleach Liquor for Use Without Settling

211 Chemistry of Bleaching Chemical Wood Pulps

214 What Do We Know About Bleaching?

236 Importance of pH and Catalysts in Bleaching Operations

242 Production and Use of Unsettled Bleach Liquor

243 Procedures and Brightness Grades in Bleaching Sulfate Pulps

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

6 UNION STREET, NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • CHICAGO, ILL. • WILMINGTON, CALIF. • TACOMA, WASH.

HOOKER CHEMICALS®

10-1711

SODIUM SULFIDE • SODIUM SULFHYDRATE • SODIUM BENZOATE • CAUSTIC SODA • MURIATIC ACID • PARADICHLOROBENZENE • CHLORINE

Chemical Wood Manifold White and Colored

No. 97—170,000 lbs., No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.; min. order, 10,000 lbs.
- Patterson Parchment Paper Co.... $.1583
- Ancram Paper Mills ..... .1589
- * Frank Parsons Paper Co., Inc. .. .1446
- Walker Goulard Plehn Co. ..... .1507
- Bulkley Dunton & Co., Inc. ..... .1479

No. 98—20,000 lbs., white, No. 18; flat, cut 8x10½; min. order, 10,000 lbs.
- The Whitaker Paper Co. ..... $.2193
- Patterson Parchment Paper Co.... .1684
- Ancram Paper Mills ..... .1786
- * Frank Parsons Paper Co., Inc. .. .1550
- Walker Goulard Plehn Co. ..... .1561
- Bulkley Dunton & Co., Inc. ..... .1594

No. 99—25,000 lbs., No. 18; rolls 22 ins. wide, 30 ins. diameter (3-inch fiber cores); min. order, 20,000 lbs.
- Patterson Parchment Paper Co... $.1458
- * Frank Parsons Paper Co., Inc. .. .1350
- Walker Goulard Plehn Co. ..... .1408
- Bulkley Dunton & Co., Inc. ..... .1350

No. 100—85,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 18; flat, cut 28x34, 32x42, and 34x44 ins.; min. order, one color, 5,000 lbs.
- Ancram Paper Mills ..... $.1670
- * Frank Parsons Paper Co., Inc. .. .1599
- Walker Goulard Plehn Co. ..... .1642

50% Manifold, White and Colored

No. 101—10,000 lbs., No. 14; flat, cut 32x42 ins.; min. order, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.3300
- * Ancram Paper Mills ..... .3242

No. 102—45,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x44 ins.; min. order, 10,000 lbs.
- R. P. Andrews Paper Co. ..... $.4117
- Barton Duer & Koch Paper Co... .2645
- * Old Dominion Paper Co. (Limited to 30,000 lbs. only. If not No. 104 accept 45,000 lbs.) .2550
- Paper Corp. of United States.... .2640
- Ancram Paper Mills ..... .2842
- Walker Goulard Plehn Co. ..... .2641

No. 103—20,000 lbs., No. 18; flat, cut 8x10½ ins.; min. order, 10,000 lbs.
- R. P. Andrews Paper Co. ..... $.4367
- * Barton Duer & Koch Paper Co. . .2700
- Paper Corp. of United States.... .2840
- Ancram Paper Mills ..... .3079
- Walker Goulard Plehn Co. ..... .2704

No. 104—15,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 18; flat, cut 28x34, 32x42, and 34x44 ins.; min. order, one color, 5,000 lbs.
- R. P. Andrews Paper Co. ..... $.4228
- Barton Duer & Koch Paper Co... .3000
- Old Dominion Paper Co. ..... .287699
- * Paper Corp. of United States .... .2740
- Ancram Paper Mills ..... .2917

50% White Glazed Manifold

No. 106—20,000 lbs., No. 16; flat, cut 32x42 ins.; min. order, 20,000 lbs.
- * Barton Duer & Koch Paper Co. . $.3290
- Paper Corp. of United States.... .3530

Chemical Wood Bond, White

No. 112—280,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 40,000 lbs.
- R. P. Andrews Paper Co. ..... $.1241
- The Whitaker Paper Co. ..... .1407
- Eastern Corp. ..... .1333
- Walker Goulard Plehn Co. ..... .1228
- * Wilcox-Walter-Furlong Paper Co. .1214
- Stanford Paper Sales Corp. ..... .1234

Chemical Wood White Mimeograph Bond

No. 113—80,000 lbs., No. 40; flat, cut 32½x42½ and 40½x53 ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.
- R. P. Andrews Paper Co. ..... $.1279
- Eastern Corp. ..... .1333
- Walker Goulard Plehn Co. ..... .1273
- * Wilcox-Walter-Furlong Paper Co. .1269

25% Bond, White and Colored

No. 114—40,000 lbs., No. 26; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.1970
- Paper Corp. of United States.... .1961
- Stanford Paper Sales Corp. ..... .2076
- * Howard Paper Mills (Aetna Paper Div.) ..... .1943

No. 115—30,000 lbs., No. 26; rolls, 22 ins. wide; diameter, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.
- Barton Duer & Koch Paper Co... $.1970
- Paper Corp. of United States.... .1910
- Stanford Paper Sales Corp. ..... .2026
- * Howard Paper Mills (Aetna Paper Div.) ..... .1893

No. 116—500,000 lbs., No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 20,000 lbs.
- Bermingham & Prosser Co. (250,000 lbs.) ..... $.1644
- Bermingham & Prosser Co. (250,000 lbs.) ..... .1659
- * Paper Corp. of United States (250,000 lbs.) ..... .1571
- * Paper Corp. of United States (250,000 lbs.) ..... .1605
- Frank Parsons Paper Co., Inc. (100,000 lbs. only) ..... .1714
- Walker Goulard Plehn Co. ..... .1705
- Stanford Paper Sales Corp. .... .1687
- Howard Paper Mills (Aetna Paper Div., 300,000 lbs.) .1632
- Howard Paper Mills (Aetna Paper Div., Balance) .. .1652

No. 117—10,000 lbs., No. 32; flat, cut 8x10½ ins.; min. order, 10,000 lbs.
- * Paper Corp. of United States ... $.1740
- Frank Parsons Paper Co., Inc.... .1814
- Stanford Paper Sales Corp. ..... .1797
- Howard Paper Mills (Aetna Paper Div.) ..... .1752

No. 118—735,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, 20,000 lbs.
- Butler Co. (250,000 lbs.) ..... $.1574
- Butler Co. (250,000 lbs.) ..... .1589
- Butler Co. (Balance) ..... .1604
- * Paper Corp. of United States (225,000 lbs.) ..... .1491
- * Paper Corp. of United States (210,000 lbs.) ..... .1511
- Paper Corp. of United States (300,000 lbs.) ..... .1526
- Frank Parsons Paper Co., Inc. (100,000 lbs. only) ..... .1658
- Walker Goulard Plehn Co. ..... .1599
- Stanford Paper Sales Corp. (100,000 lbs. only) ..... .1750
- * Howard Paper Mills (Aetna Div., 300,000 lbs.) .... .1526
- Howard Paper Mills (Aetna Paper Div., Balance)... .1533

No. 119—85,000 lbs., No. 40; flat, cut 8x10½ ins.; min. order, 20,000 lbs.
- Butler Co. ..... $.1674
- * Paper Corp. of United States .... .1616
- Frank Parsons Paper Co., Inc.... .1758
- Walker Goulard Plehn Co. ..... .1699
- Stanford Paper Sales Corp..... .1900
- Howard Paper Mills (Aetna Paper Div.) ..... .1633

No. 120—90,000 lbs., No. 32; rolls, 21, 22, and 26 ins. wide; diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 20,000 lbs.
- Paper Corp. of United States .... $.1609
- Stanford Paper Sales Corp. ..... .1637
- * Howard Paper Mills (Aetna Paper Div.) ..... .1587

No. 122—20,000 lbs., medical form pink, green, yellow, cherry, No. 32; rolls, 26 ins. wide; diameter 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.1770
- Paper Corp. of United States.... .1889
- * Howard Paper Mills (Aetna Paper Div.) ..... .1731

No. 123—10,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 26; flat, cut 34x44 ins.; min. order, 5,000 lbs.
- Barton Duer & Koch Paper Co... $.2200
- * Paper Corp. of United States .... .2161
- Howard Paper Mills (Aetna Paper Div.) ..... .2183

No. 124—270,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.
- Mudge Paper Co. (150,000 lbs.).. $.1694
- Mudge Paper Co. (Balance) ..... .1709
- Paper Corp. of United States.... .1689
- Frank Parsons Paper Co., Inc.... .1728
- Stanford Paper Sales Corp. ..... .1767
- * Howard Paper Mills (Aetna Paper Div.) ..... .1677

No. 125—110,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.; min. order, one color, 10,000 lbs.
- Mudge Paper Co. ..... $.1654
- * Paper Corp. of United States .... .1616
- Frank Parsons Paper Co., Inc.... .1674
- Stanford Paper Sales Corp..... .1687
- Howard Paper Mills (Aetna Paper Div.) ..... .1657

25% Opacified Bond Paper

No. 128—40,000 lbs., No. 32; flat, cut 32x42, 38x48, and 38x49½ ins.; min. order, 40,000 lbs.
- Barton Duer & Koch Paper Co.... $.1900
- Paper Corp. of United States.... .1930
- Stanford Paper Sales Corp. ..... .2150
- * Howard Paper Mills (Aetna Paper Div.) ..... .1898

No. 129—20,000 lbs., buff, No. 32; flat, cut 41x56 ins., grain long; min. order, 20,000 lbs.
- Barton Duer & Koch Paper Co. . $.2100
- * Paper Corp. of United States .... .1985

50% White Bond

No. 130—10,000 lbs., No. 32; flat, cut any size, min. width 21 ins., max. width 34 ins.; min. order, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.2200
- Paper Corp. of United States.... .2065
- * Frank Parsons Paper Co., Inc. .. .2048
- Stanford Paper Sales Corp. ..... .2254

No. 131—10,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins., max. width 34 ins.; min. order, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.2200
- * Paper Corp. of United States .... .1980
- Stanford Paper Sales Corp..... .2174

100% White Bond

No. 133—3,000 lbs., No. 32; flat, cut any size, min. width 16 ins., max. width 38 ins.; min. order, 2,000 lbs.
- R. P. Andrews Paper Co. ..... $.5010
- Barton Duer & Koch Paper Co... .4100
- Paper Corp. of United States.... .4900
- Wilcox-Walter-Furlong Paper Co.. .4045
- * Stanford Paper Sales Corp. ..... .4000

No. 134—5,000 lbs., No. 40; flat, cut any size, min. width 16 ins., max. width 38 ins.; min. order, 2,000 lbs.
- R. P. Andrews Paper Co. ..... $.4778
- Barton Duer & Koch Paper Co... .4000
- Paper Corp. of United States.... .4800
- Wilcox-Walter-Furlong Paper Co.. .4045
- * Stanford Paper Sales Corp. ..... .3900

Chemical Wood White Ledger

No. 150—240,000 lbs., No. 48; flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 20,000 lbs.
- * R. P. Andrews Paper Co. (120,000 lbs.) ..... $.1193
- R. P. Andrews Paper Co. (Balance) ..... .1217
- * The Whitaker Paper Co. (120,000 lbs. only) ..... .1193
- Eastern Corp. ..... .1431
- Frank Parsons Paper Co., Inc.... .1411
- Walker Goulard Plehn Co. ..... .1246
- Wilcox-Walter-Furlong Paper Co.. .1314

No. 151—90,000 lbs., No. 64; flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 10,000 lbs.
- * R. P. Andrews Paper Co. ..... $.1217
- Cauthorne Paper Co., Inc. ..... .1259
- Eastern Corp. ..... .1431
- Walker Goulard Plehn Co. ..... .1246
- Wilcox-Walter-Furlong Paper Co.. .1314

No. 153—40,000 lbs., No. 88; flat, cut any size, min. width 17 ins., max. width 48 ins.; min. order, 10,000 lbs.
- Eastern Corp. ..... $.1431
- * Walker Goulard Plehn Co. ..... .1246
- Wilcox-Walter-Furlong Paper Co.. .1314

25% Ledger, White and Colored

No. 154—195,000 lbs., white, No. 48; flat, cut 28x34, 32x42, 34x44, and 38x48 ins.; min. order, 10,000 lbs.
- * Paper Corp. of United States (97,500 lbs.) ..... $.1489
- * Paper Corp. of United States (97,500 lbs.) ..... .1511
- Frank Parsons Paper Co., Inc. (100,000 lbs. only) ..... .1673
- Walker Goulard Plehn Co. ..... .1569
- Howard Paper Mills (Aetna Paper Div.) ..... .1539

No. 155—145,000 lbs., white, No. 64; flat, cut 28x34, 32x42, 34x44, and 38x48 ins.; min. order, 10,000 lbs.
- * Paper Corp. of United States (72,500 lbs.) ..... $.1493
- * Paper Corp. of United States (72,500 lbs.) ..... .1511
- Frank Parsons Paper Co., Inc.... .1673
- Walker Goulard Plehn Co..... .1569
- Stanford Paper Sales Corp. ..... .1800
- Howard Paper Mills (Aetna Paper Div.) ..... .1539

No. 156—45,000 lbs., No. 88; flat, cut 28x34, 32x42, 34x44 and 38x48 ins.; min. order, 10,000 lbs.
- * Paper Corp. of United States .... $.1493
- Walker Goulard Plehn Co. ..... .1569
- Stanford Paper Sales Corp. ..... .1770
- Howard Paper Mills (Aetna Paper Div.) ..... .1637

No. 157—45,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 64; flat, cut 34x44 ins.; min. order, one color, 10,000 lbs.
- * Paper Corp. of United States ... $.1593
- Walker Goulard Plehn Co. ..... .1642
- Howard Paper Mills (Aetna Paper Div.) ..... .1599

No. 158—40,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 88; flat, cut 34x44 ins.; min. order, one color, 10,000 lbs.
- Barton Duer & Koch Paper Co... $.1800
- * Paper Corp. of United States .... .1593
- Walker Goulard Plehn Co. ..... .1642
- Stanford Paper Sales Corp. ..... .1820
- Howard Paper Mills (Aetna Paper Div.) ..... .1697

100% White Ledger

No. 177—10,000 lbs., No. 64; flat, cut 28x34, 32x42, and 34x44 ins.; min. order, 10,000 lbs.
- R. P. Andrews Paper Co. ..... $.4486

Inspector gauges screen plate slot for precise .014 accuracy. Further microscopic examination double-checks careful fabrication at Union Screen Plate Company.

how **method** plus **material** give screen plates **longer life**

It takes science's tools in craftsmen's hands to do the careful finishing that adds months to screen plate service life.

And it takes a screen plate metal that doesn't crumble away in corrosive mill stocks.

That's why Union Screen Plate Company checks and rechecks finishing operations with caliper, feeler gauge and microscope. And that's why they recommend Inconel when other metals are giving unsatisfactory service.

And why Inconel?

First, because Union's engineers have found that Inconel resists corrosion.

Inconel plates in one rag paper mill showed no measurable slot enlargement from corrosion after three years of service. Plates of other materials often gave trouble within a year.

Second, Inconel is strong. In some cases 3/16-inch screen plates of the usual metals have been replaced by Inconel two-thirds as thick!

Third, it is fatigue-resisting and withstands severe vibration and shock.

And fourth, Inconel means smoother plant operation. Because Inconel plates do not rust or pit, surface stays smooth . . . "strings" of fibers do not build up . . . there's less hand cleaning . . . fewer shut-downs or stoppages. Unvarying slot dimensions keep screening efficiency high, rejects at a minimum.

All in all, Inconel screen plates measure up to years of extra service . . . with less trouble . . . at lower yearly costs. For additional information about Inconel screen plates, write to the Union Screen Plate Co., Fitchburg, Mass.

Today, Inconel, like the other Nickel Alloys, is on extended delivery because so much is needed for defense. Therefore, it pays to anticipate needs. Always order well in advance giving NPA rating and complete end-use information.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL "S"® MONEL • NICKEL • LOW CARBON NICKEL • DURANICKEL® INCONEL® • INCONEL "X"® • INCOLOY • NIMONICS®

Barton Duer & Koch Paper Co... .3900
Paper Corp. of United States.... .4290
* Stanford Paper Sales Corp. ..... .3840

No. 178—5,000 lbs., No. 88; flat, cut 22¾x31 and 34x44 ins.; min. order, 5,000 lbs.
R. P. Andrews Paper Co. ..... $.4409
Barton Duer & Koch Paper Co.... .3900
Paper Corp. of United States.... .4390
* Stanford Paper Sales Corp. ..... .3840

Chemical Wood, White and Colored Index

No. 182—360,000 lbs., white, 25½x30½—220; flat, cut 32x42 and 34x44, and 39x50 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.1350
Barton Duer & Koch Paper Co.... .1345
The Whitaker Paper Co. ..... .1265
* Frank Parsons Paper Co., Inc. .. .11635
Walker Goulard Plehn Co. ..... .1222
Wilcox-Walter-Furlong Paper Co.. .1237

No. 183—25,000 lbs., single-ply, 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.1350
Barton Duer & Koch Paper Co... .1345
The Whitaker Paper Co. ..... .1265
Walker Goulard Plehn Co. ..... .1242
* Wilcox-Walter-Furlong Paper Co. .1237

No. 184—10,000 lbs., white, single-ply, 25½x30½—340; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.1350
* Barton Duer & Koch Paper Co. . .1345

No. 185—40,000 lbs., buff, single-ply, 25½x30½—220; flat, cut 32x42 ins., with projecting colored-paper marker between each 100 sheets; min. order, 20,000 lbs.
R. P. Andrews Paper Co. ..... $.1350
Barton Duer & Koch Paper Co.... .1440
Walker Goulard Plehn Co. ..... .1291
* Wilcox-Walter-Furlong Paper Co. .1268

50% Index, White and Colored

No. 188—230,000 lbs., white, 25½x30½—220; flat, cut 32x42, 32x48, and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
Barton Duer & Koch Paper Co.... $.1722
* Paper Corp. of United States (115,000 lbs.) ..... .1703
* Paper Corp. of United States (115,000 lbs.) ..... .1661
Frank Parsons Paper Co., Inc.... .1769
Walker Goulard Plehn Co. ..... .1761
Howard Paper Mills (Aetna Paper Div.) ..... .1747

No. 189—30,000 lbs., white, single-ply, 25½x30½—280; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
Barton Duer & Koch Paper Co.... $.1782
* Paper Corp. of United States .... .1703
Walker Goulard Plehn Co. ..... .1791

No. 190—10,000 lbs., white, 25½x30½—340; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
Barton Duer & Koch Paper Co.... $.2045
* Paper Corp. of United States .... .2038
Walker Goulard Plehn Co. ..... .2048

No. 191—145,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow; 25½x30½—220; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, one color, 10,000 lbs.
Barton Duer & Koch Paper Co.... $.1832
* Paper Corp. of United States .... .1744
Frank Parsons Paper Co., Inc.... .1837
Walker Goulard Plehn Co. ..... .1831
Howard Paper Mills (Aetna Paper Div.) ..... .1797

No. 192—40,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow; 25½x30½—280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets; min. order, one color, 5,000 lbs.
Barton Duer & Koch Paper Co.... $.2500
* Paper Corp. of United States .... .1928
Walker Goulard Plehn Co. ..... .1951

100% Cream-White Index

No. 196—50,000 lbs., single-ply, 25½x30½—250; flat, cut 20¼x30 ins.; min. order, 20,000 lbs.
R. P. Andrews Paper Co. ..... $.4108
* Barton Duer & Koch Paper Co. . .3645
Paper Corp. of United States.... .3937
Walker Goulard Plehn Co. ..... .3730
Stanford Paper Sales Corp. ..... .3770

Coated Cover, White and Colored

No. 200—45,000 lbs., white, 20x26—120; flat, cut 26¼x41 and 34x44 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 lbs.
Bermingham & Prosser Co. ..... $.1440
Paper Corp. of United States.... .1475
* Stanford Paper Sales Corp. ..... .1426

Antique-Finish Cover, White and Colored

No. 202—65,000 lbs., 20x26—100; flat, cut 25¼x39 and 34x44 ins.; the grain to run lengthwise of the sheet; min. order, 20,000 lbs.
The Whitaker Paper Co. ..... $.1329
Old Dominion Paper Co. ..... .1441
Walker Goulard Plehn Co. ..... .1246
* Wilcox-Walter-Furlong Paper Co. .1207

No. 203—110,000 lbs., 20x26—100; blue, buff, dawn, quaker drab, terra cotta, gray, brown, green, gobelin blue, granite, tea, and canary; flat, cut 25¼x39 and 34x44 ins.; min. order, one color, 10,000 lbs.
The Whitaker Paper Co. ..... $.1375
Old Dominion Paper Co. ..... .1491
* Frank Parsons Paper Co., Inc. .. .1333

Cloth Lined Cover, White and Colored

No. 205—5,000 sheets, brown or quaker drab, 20x26—72; flat, cut 36x38 ins.; min. order, one color, 5,000 sheets.
* Mudge Paper Co. $350.60
(Per M Sheets)

50% Laid Antique-Finish Cover, Colored

No. 206—50,000 lbs., blue, cream, white, gray, and green; 20x26—130; flat, cut 25¼x39 and 34x44 ins.; the grain to run lengthwise of the sheet; the laid lines to run the short direction of the sheet; min. order, one color, 5,000 lbs.
* Paper Corp. of United States ... $.1892
Frank Parsons Paper Co., Inc.... .2079
Walker Goulard Plehn Co. ..... .2290

Wood Manila

No. 208—140,000 lbs., 24x36—80; flat, cut 25x38, 32x42, and 40x52½ ins.; min. order, 20,000 lbs.
The Whitaker Paper Co. ..... $.1020
Bermingham & Prosser Co. ..... .1075
Boston Paper Board Co. (Carload shipments) ..... .1125
Boston Paper Board Co. (Less than carload shipments).. .1200
Frank Parsons Paper Co., Inc.... .1020
Walker Goulard Plehn Co. ..... .1192
Stanford Paper Sales Corp..... .1035
* Bulkley Dunton & Co., Inc. ... .0876

Chemical Wood Manila

No. 213—10,000 lbs., 24x36—140; flat, cut 32x42 ins.; min. order, 10,000 lbs.
* Mudge Paper Co. ..... $.1640

Rope Manila

No. 215—6,500 lbs., 24x36—160; rolls, 48 ins. wide; diameter 28 ins. min.; 30 ins. max. (3-inch fiber cores); min. order, 5,000 lbs.
* R. P. Andrews Paper Co. (Basis of receiving both 215 and 217 or neither) ..... $.3100
Paper Corp. of United States..... .3145

Drumhead Manila

No. 217—5,000 lbs., 24x36—280; flat, cut 32x44 ins.; min. order, 5,000 lbs.
* R. P. Andrews Paper Co. (Basis of receiving both 215 and 217 or neither) ..... $.3100

No. 2 Kraft

No. 218—25,000 lbs., 24x36—80; flat, cut any size, max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.

No. 218—25,000 lbs., 24x36—100; flat, cut any size, max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.

No. 218—40,000 lbs., 24x36—120; flat, cut any size, max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.

No. 218—25,000 lbs., 24x36—140; flat, cut any size, max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.

No. 218—25,000 lbs., 24x36—160; flat, cut any size, max. length 56 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
* Cauthorne Paper Co., Inc. (24x36—80) ..... $.07848
* Cauthorne Paper Co., Inc. (24x36—100) ..... .07698
* Cauthorne Paper Co., Inc. (24x36—120) ..... .07538
* Cauthorne Paper Co., Inc. (24x36—140) ..... .07538
* Cauthorne Paper Co., Inc. (24x36—160) ..... .07538
Frank Parsons Paper Co., Inc. (24x36—80) ..... .082
Frank Parsons Paper Co., Inc. (24x36—100) ..... .0815
Frank Parsons Paper Co., Inc. (24x36—120) ..... .0810
Frank Parsons Paper Co., Inc. (24x36—140) ..... .0825

No. 219—5,000 lbs., 24x36—100; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.

No. 219—10,000 lbs., 24x36—120; cut any size, folded (25 sheets per fold), in wrapped bundles; min. order, 5,000 lbs.
* Cauthorne Paper Co., Inc. (24x36—100) ..... $.08138
* Cauthorne Paper Co., Inc. (24x36—120) ..... .07868
Frank Parsons Paper Co., Inc. (24x36—100) ..... .0825
Frank Parsons Paper Co., Inc. (24x36—120) ..... .0825

No. 220—25,000 lbs., 24x36—70/80; 9 and 11 ins. wide, min. 28 ins., max. 30 ins. in diameter; rolls, wound on wooden plugs 1¼-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.

No. 220—15,000 lbs., 24x36—70/80; 12⅝ ins. wide, min. 21 ins., max. 22 ins. in diameter; rolls, wound on wooden plugs 1¼-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.

No. 220—5,000 lbs., 24x36—140; 36 and 48 ins. wide, min. 28 ins., max. 30 ins. in diameter; rolls, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.

No. 220—5,000 lbs., 24x36—160; 36 and 48 ins. wide, min. 28 ins., max. 30 ins. in diameter; rolls, wound on wooden plugs, 1½-inch hole, or on 3-inch fiber core as may be specified with the order; min. order, 5,000 lbs.
* Cauthorne Paper Co., Inc. (24x36—70) ..... $.07486
* Cauthorne Paper Co., Inc. (24x36—80) ..... .07238
* Cauthorne Paper Co., Inc. (24x36—70) ..... .07488
* Cauthorne Paper Co., Inc. (24x36—80) ..... .07238
* Cauthorne Paper Co., Inc. (24x36—140) ..... .07088
* Cauthorne Paper Co., Inc. (24x36—160) ..... .07288
Frank Parsons Paper Co., Inc. (24x36—80) ..... .0795
Frank Parsons Paper Co., Inc. (24x36—80) ..... .0795
Frank Parsons Paper Co., Inc. (24x36—140) ..... .075

White Gummed

No. 252—350,000 sheets (ungummed), No. 36; flat, cut 22x34 ins.; min. order, 25,000 sheets.
R. P. Andrews Paper Co. ..... $.2192
Barton Duer & Koch Paper Co.... .2242
The Whitaker Paper Co. ..... .2640
Old Dominion Paper Co. ..... .219188
Butler Co. ..... .21915
Bermingham & Prosser Co. ..... .2190
Paper Corp. of United States.... .2190
* Frank Parsons Paper Co., Inc. ..$18.43 (Per M Sheets)
Stanford Paper Sales Corp. ..... .2640
Bulkley Dunton & Co., Inc. ..... .1894

25% Blotting, White

No. 254—10,000 lbs., 19x24—160; flat, cut 19x24 ins., in wrapped bundles, min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.1597
The Whitaker Paper Co. ..... .1600
Old Dominion Paper Co. ..... .15989
Butler Co. ..... .1775
Marquette Paper Corp. ..... .1625
Bermingham & Prosser Co. ..... .1775
Central Ohio Paper Co. ..... .1952
* Frank Parsons Paper Co., Inc. .. .1546
Walker Goulard Plehn Co. ..... .1769
Wilcox-Walter-Furlong Paper Co.. .1775
Stanford Paper Sales Corp. ..... .1775
Bulkley Dunton & Co., Inc..... .1623

Desk Blotting, Colored

No. 255—15,000 lbs., light green, 19x24—200; flat, cut 19x24 ins., in bundles wrapped and tied; min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.1347
Old Dominion Paper Co. ..... .144989
Butler Co. ..... .1425
Marquette Paper Corp. ..... .1300
Bermingham & Prosser Co. ..... .1425
Central Ohio Paper Co. ..... .1567
Frank Parsons Paper Co., Inc. .. .1400
Walker Goulard Plehn Co. ..... .1419
Wilcox-Walter-Furlong Paper Co.. .1425
Stanford Paper Sales Corp. ..... .1425
* Bulkley Dunton & Co., Inc. ..... .1298

High-Finish Chemical Wood Manila Tag

No. 271—90,000 lbs., 24x36—280; flat, cut 28x34 and 38x48 ins.; min. order, 20,000 lbs.
R. P. Andrews Paper Co. ..... $.1159
* The Whitaker Paper Co. ..... .1158
Paper Corp. of United States (Minimum of 40,000 lbs.) .... .1125 (Rejected)
Paper Corp. of United States (Alternate) ..... .1160 (Rejected)
Walker Goulard Plehn Co. ..... .1264

Jute Tag

No. 280—70,000 lbs., 22½x28½—200; flat, cut 34x44 ins.; min. order, 10,000 lbs.

R. P. Andrews Paper Co. ..... $.1697
* Paper Corp. of United States ... .1695

No. 281—10,000 lbs., 22½x28½—280; flat, cut 34x44 ins.; min. order, 10,000 lbs.
* R. P. Andrews Paper Co. ..... $.1697
Paper Corp. of United States.... .1705

Manila Board

No. 282—10,000 lbs., 22½x28½—400; flat, cut 22x34 ins., with projecting colored-paper marker between each 100 sheets; min. order, 10,000 lbs.
* Paper Corp. of United States .... $.1000

White Litho-Coated One-Side Cardboard

No. 300—10,000 sheets, 34x57 ins.; the grain to run lengthwise of the sheet; min. order, 10,000 sheets.
* R. P. Andrews Paper Co.
(Per M sheets) $138.37
Barton Duer & Koch Paper Co. . 153.35
Paper Corp. of United States 138.85
Walker Goulard Plehn Co. 152.29

Railroad Board, White and Colored

No. 301—15,000 sheets, white; flat, 22x34 ins., 4-ply, each 100 sheets fully banded; min. order, 10,000 sheets.
* Walker Goulard Plehn Co.
(Per M sheets) $55.74

No. 302—15,000 sheets, white; flat, 22x34 ins., 8-ply, each 100 sheets fully banded; min. order, 5,000 sheets.
Walker Goulard Plehn Co.
(Per M sheets) $85.83

No. 303—5,000 sheets, white; flat, 22x34 ins., 14-ply, each 50 sheets fully banded; min. order, 5,000 sheets.
* Walker Goulard Plehn Co.
(Per M sheets) $122.71

No. 304—5,000 sheets, ash gray, green, orange, and red; flat, 22x34 ins., 4-ply, each 100 sheets fully banded; min. order, one color, 5,000 sheets.
* Walker Goulard Plehn Co.
(Per M sheets) $60.99

Wood Cardboard, Colored

No. 306—120,000 lbs., buff, 22½x28½—150; rolls, 20 and 23 ins. wide, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, 40,000 lbs.
Barton Duer & Koch Paper Co. . $.0795
* The Whitaker Paper Co. ..... .0788
Bermingham & Prosser Co. ..... .0875
Paper Corp. of United States.... .1050
Frank Parsons Paper Co., Inc.
(120,000 lbs.) ..... .0809
Frank Parsons Paper Co., Inc.
(Alternate) ..... .0990
Bulkley Dunton & Co., Inc. ..... .0789

No. 307—70,000 lbs., buff, 22½x28½—150; flat, cut 32x42 ins.; min. order, 20,000 lbs.
Barton Duer & Koch Paper Co. . $.0905
The Whitaker Paper Co. ..... .0917
Bermingham & Prosser Co. ..... .0975
Paper Corp. of United States
(If shipped in carload quantities) .1050
(Otherwise) ..... .1100
Frank Parsons Paper Co., Inc. .. .0911
(and alternate) ..... .1100
* Bulkley Dunton & Co., Inc. ..... .0904

No. 308—10,000 lbs., melon; 22½x28½—184; flat, cut 20x30 ins.; min. order, 10,000 lbs.
* Bermingham & Prosser Co. ..... $.1000
Paper Corp. of United States.... .1100

No. 309—65,000 lbs. blue, buff, green, melon, pink and yellow; 22½x28½—184; rolls, 20 ins. wide, 34 ins. min., 36 ins. max. (3-inch fiber cores); min. order, one color, 10,000 lbs.
* Bermingham & Prosser Co. ..... $.0975
Paper Corp. of United States
(If shipped in carload qauntities) .1050
(Otherwise) ..... .1100

Chemical Wood Tan Board

No. 310—190,000 lbs., 22½x28½—200; flat, cut 25x38 ins. grain long, 28x38 ins. grain short, and 34x44 ins. grain long; min. order, 10,000 lbs.
* R. P. Andrews Paper Co. ..... $.1167
Mudge Paper Co. ..... .1275
Old Dominion Paper Co. ..... .127787
Paper Corp. of United States.... .1375
Walker Goulard Plehn Co. ..... .1264

United States Postal Card Paper

No. 325—2,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide, diameter 34 ins. min., 36 ins. max. (6-inch iron or metal capped returnable fiber cores); min. order, 40,000 lbs.
* R. P. Andrews Paper Co.
(1,400,000 lbs.) ..... .0955
The Whitaker Paper Co. ..... .0989
* Frank Parsons Paper Co., Inc.
(1,100,000 lbs.) ..... .0965

No. 327—60,000 lbs., 22½x28½—188; rolls, 22 ins. wide, diameter 34 ins. min., 36 ins. max. (6-inch iron or metal capped returnable fiber cores); min. order, 40,000 lbs.
* R. P. Andrews Paper Co. ..... $.0955

Folding Bristol, White and Colored

No. 329—10,000 lbs., gray, 22½x35—300; flat, cut 35x45 ins., the grain to run lengthwise of the sheet; min. order, 10,000 lbs.
R. P. Andrews Paper Co..... $.1627
* Mudge Paper Co. ..... .1619

Pressboard, Colored

No. 351—5,000 sheets, red; flat, cut 30x36 ins., thickness .0140 inch; min. order, 5,000 sheets.
* R. P. Andrews Paper Co.
(Per M sheets) $18.85

No. 352—55,000 sheets, gray; flat, cut 29¼x34¼ ins., thickness .0300 inch; min. order, 5,000 sheets.
R. P. Andrews Paper Co.
(Per M sheets) $39.70
* Barton Duer & Koch Paper Co... $27.33

Newsboard

No. 360—250,000 lbs., 26x38; No. 100; flat, cut any size, min. width 21 ins., max. width 42 ins. (To be guillotine-trimmed square on four sides.) min. order, 10,000 lbs.
R. P. Andrews Paper Co. ..... $.03675
* The Whitaker Paper Co. ..... .03559
Mudge Paper Co. ..... .035625
Old Dominion Paper Co. ..... .036122
Paper Corp. of United States.. .0363
Stanford Paper Sales Corp..... .03599

Binder's Board, No. 1 Quality

No. 366—[a] 240,000 lbs., No. 1, 25¼x30¼ ins., Nos. 12, 17, 19, 21, 25, 31, and 41; flat, to trim 25x30 ins. for all boards, and to trim 34x44 ins. (Nos. 12 and 21 only); min. shipment, 20,000 lbs.; min. order, any one board number, 5,000 lbs.
* R. P. Andrews Paper Co.
(All or none) ..... $.0594
Barton Duer & Koch Paper Co... .05995

No. 367—[b]140,000 lbs., No. 1, 25¼x30¼ ins., Nos. 21, 25, 31, and 41; flat to trim 25¾x37¾ ins.; min. order, 20,000 lbs.
R. P. Andrews Paper Co.
(All or none) ..... $.0594
Barton Duer & Koch Paper Co... .05995
The Whitaker Paper Co.
(#21, 25 & 31) ..... .0686
(#41) ..... .0736

Chestnut Cover Board

No. 369—[a] 240,000 lbs., 25¼x30¼ ins., Nos. 12, 17, 19, 21, 25, 31, and 41; flat to trim 25x30 ins. for all boards, and to trim 34x44 ins. (Nos. 12 and 21 only); min. shipment, 20,000 lbs.; min. order, any one board number, 5,000 lbs.
Mead Board Sales Corp. ..... $.0594

No. 370—[b] 140,000 lbs., 25¼x30¼ ins., Nos. 21, 25, 31, and 41; flat, to trim 25¾x37¾ ins.; min. order, 20,000 lbs.
* Mead Board Sales Corp. ..... $.0594

[a] Total tonnage to be awarded on Lots 366 and/or 369 will be 215,000 pounds. Award will be made in the best interests of the Government price-wise on comparable items of either Binder's Board, No. 1 quality, or Chestnut Cover Board.

[b] Total tonnage to be awarded on Lots 367 and/or 370 will be 50,000 pounds. Award will be made in the best interests of the Government price-wise on comparable items of either Binder's Board, No. 1 quality, or Chestnut Cover Board.

NEW EQUIPMENT AND SUPPLIES

Quick Drying Adhesive

A "hot melt" type of adhesive, developed by the Finishes Division, E. I. du Pont de Nemours & Co., Wilmington, Del., takes only seconds to dry, as against hours for animal glue, according to the manufacturer.

The quick drying property of this adhesive removes a longstanding bottleneck in bookbinding. Described as a new synthetic resin, the adhesive is cited as one reason why it is possible to sell over 230 million pocket books annually in the United States. It has greatly furthered this mass production by furnishing the fast drying backbone of these books.

It is stated that now one leading printing company is capable of turning out over 20,000 pocket books an hour —more than twice the rate possible with old-style glue.

Of major interest to the papermaker is the fact that this adhesive is soluble in hot alkali and can be removed in the de-inking process. Thus, the adhesive not only stimulates production of book papers but also simplifies their reuse.

The manufacturer also points out that this material forms a flexible bond that is not effected by humidity. Being non-protein, it has no attraction for rodents and insects; and being of stable flexibility, it permits flatter opening of books and magazines.

Larger Sizes In Seamless Tubing

The Superior Tube Company, 1644 Germantown Avenue, Norristown, Pa., has announced an increase in the size range of its seamless light-wall tubing from 1¼" O.D. maximum to 2-1/16" O.D. maximum. Heretofore, specialty tube mills have offered the larger diameter light-wall tubing only in welded grades. The increased size range of Superior's seamless grade is expected to increase the number of applications

of light-wall tubing, particularly where pressures exceed the limits for welded tubing. Present applications for large diameter seamless tubing include bellows for industrial instruments, flexible metal hose for the chemical industries, and low pressure heat exchanger tubes.

Complete background information on the complete line of this tubing is available in the manufacturer's Bulletin 32.

General Purpose Counter

A completely packaged, easily installed, general purpose photoelectric counter is now being offered by Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass. The unit is called Photoelectric Counter Set PIC and consists of a photoelectric control, light source, and electric counter.

The only equipment which is located at the point-of-count is the control and light source. One or more electric counters (containing the counter face and reset knob) may be placed at any convenient location and wired to the control. Remote counting is thus easily obtained.

The control has a line cord with a male plus connection for any standard 115 volt a-c outlet. This supplies the power for both the light source and electric counter, which in turn have cables and plus for plug-in connection to the control. The entire equipment, therefore, can be installed quickly and easily with no permanent wiring required.

Complete specifications are published in manufacturer's Bulletin PA506.

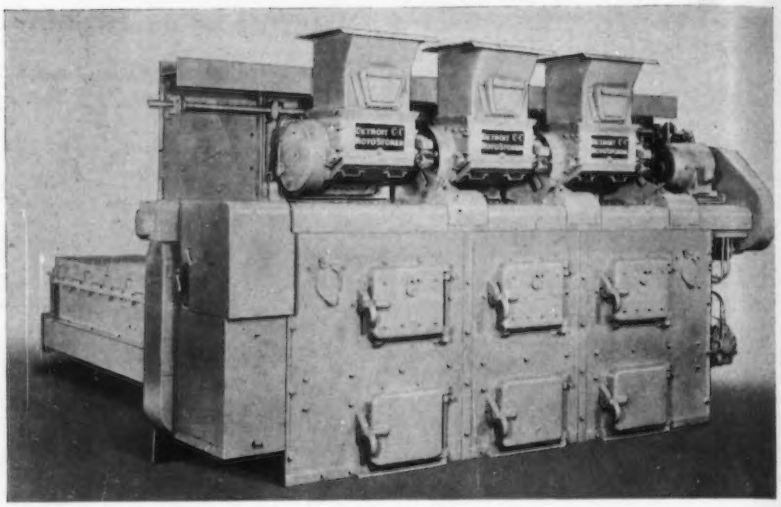
High Ratio Magnetic Amplifiers

Westinghouse Electric Corp., P. O. Box 2278, Pittsburgh 30, Pa., is now producing standardized magnetic amplifiers known as Magamps 3700-Series. The Magamps of this series are suitable components for use in systems for amplifying the minute outputs of thermocouples, photocells, ionization chambers, and strain gauges; they can be applied to arc-welding controls, ignitron-firing controls, automatic battery chargers; and they can be used as components for many amplifier or regulating functions in industrial motor-control systems. They operate on standard 60-cycle supply voltages, such as 6.3, 12.6, 30, 115, and 230 volts. The range of power output levels covered by the new series is 0.04 to 400 watts.

The magnetic cores used in this series of Magamps employ Hipernik V (50 percent iron, 50 percent nickel) alloy. Full advantage of the material's properties are realized by utilizing the essentially gapless, wound-strip, toroidal-core construction. This core has a nearly rectangular hysteresis loop and a relatively low core loss. In addition, the toroidal shape results in a smaller mean magnetic path length for a given core window area than would otherwise be obtainable. The toroidal construction also results in a saving of space and weight.

The reactors for the new Magamps are vacuum cast in thermosetting plastic. This assures a maximum of environmental protection, but at the same time produces a relatively small and lightweight unit that is mechanically durable and easy to mount. The vacuum impregnation also helps to ensure long, trouble-free life.

This new series, according to R. W. Roberts of Westinghouse, is not designed to fit every type of installation; but their high ratios of power gain to response time are desirable in a majority of applications. However, they should not be used where input signal powers of less than a few microwatts are to be amplified, or where long time delays of several seconds or more, are required. Neither are they suitable for situations where extreme linearity and accuracy are required, such as for meter pre-amplifiers. Special designs are required for these critical applications.



Light-load Smokeless Stoker

A product of the Detroit Stoker Co., General Motors Bldg., Detroit, Mich., this RotoStoker Type CC (continuous cleaning) is designed to operate at light loads and full capacity without smoke.

The continuous cleaning feature of this relatively small spreader stoker is obtained through a reciprocating grate, the alternate sections of which are fixed. Provision is made for proper agitation of the fuel bed to keep it porous, thus avoiding blow-holes and dead spots. Scientific designing of the fire air and cinder return insures ample furnace turbulence.

In small and medium sizes units (5,000 to 75,000 pounds of steam per hour), smokeless operation on light loads has heretofore been diffcult when units were cleaned intermittently. The "continuous cleaning" provision in this latest unit now reduces former difficulties, according to the manufacturer.

They cite a successful demonstration of smokeless operation in one of these stokers, which operated without smoke, supplying 40,000 pounds steam to a generator at Motor Products Corp., Detroit, Mich. No smoke complaints were heard from a large residential area only a quarter of a mile away, it is said.

coating formulas containing Calgon* give

better pigment dispersion

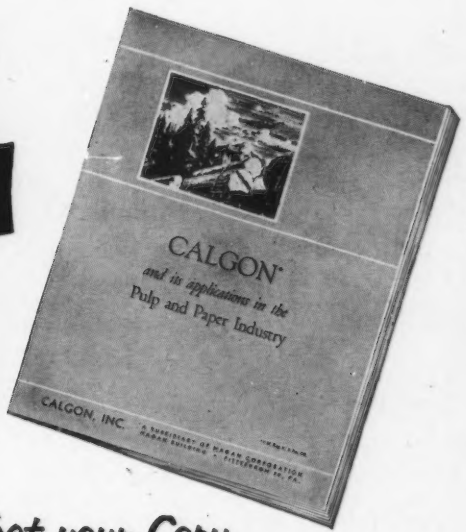
better coating colors

better coated surfaces

Use CALGON in your coating formulas, and you get a lot of benefits. Better pigment dispersion? Yes, because Calgon's superior deflocculating properties provide better pigment dispersion, yielding a better coated stock. Better coating colors? Again yes, because Calgon improves flow properties of the coating color and allows use of higher solids.

Better coated surfaces? Calgon in the coating formula provides a better bond between paper and coating, and results in a smoother surface, free of grit.

Write for information on how Calgon can help you. And ask for your copy of "Calgon, and its application in the Pulp and Paper Industry."



Get your Copy of this Booklet

*T. M. Reg. U. S. Pat. Off.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION
HAGAN BUILDING, PITTSBURGH 30, PA.

CALGON, INC.
Hagan Building, Pittsburgh 30, Pa.

Please send me a copy of the booklet, "CALGON and Its Applications in the Pulp & Paper Industry."

Name _____ Title _____

Company _____

Address _____

City _____ State _____

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton	$121.00/$126.00
Sheets	138.00/ 147.50

Kraft—per cwt. 50# base wgt. OPS Ceiling CPR 88

F.o.b. Southern & Western integrated mills. C.l. Freight allowed up to $10 a ton.

Standard Wrapping, ctr. rolls	$7.75/ —
Butchers, counter rolls	8.25/ —
Standard Bag, mill rolls	7.50/ —
Shipping Sack, mill rolls	7.75/ —
Gumming, mill rolls	8.00/ —
Asphalting, mill rolls	7.75/ —
Envelope, Sub. 20, mill rolls	9.25/ —

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs.

Wh. No. 1 Frd.	$1.85/$1.90
Wh. No. 1 MG	1.85/ 1.90
Wh. No. 1½	1.50/ 1.65
Wh. No. 2	1.35/ 1.45
Kraft Anti-Tar 20-30	1.75/ 1.80
White Anti-Tar 20-30	2.20/ —

Toilet— per case of 100 rolls—1M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5, 650 sheets	6.65/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.81/10.14
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x4½, 2 ply	$8.95/10.37
4½x5, 2 ply	10.25/10.75

Paper Towels—per case of 3750

Wh. Jr. M'tif'd 9⅛x9½	$6.40
Br. Sr. M'tif'd 9⅞x12	4.40
Br. Jr. M'tif'd 9½x9⅞	3.90
Br. Jr. Sgl. fold 9⅞x10¾	3.95
C-Fold 10⅛ min. x 14 max.	5.90/ 6.64
Blchd. 7½x11, 48/50 rolls	6.80/ 7.92

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets	$19.55/21.55
Reg. Jute M.F. 40-lb., sheets	18.50/20.50
Printing Manila	12.00/ —

Gummed Tape—per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$6.90/ —
60-lb. 600 ft. GSI	6.90/ —
35-lb. 800 ft. GSI	7.95/ —
35-lb. 500 ft. GSO	6.00/ —

MARKET WOOD PULP

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered Basis		Varying Freight Allowances		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 87.50†	‡$60.00/ 90.00	§$66.00/ 70.00		$75.00/ — §
Sulfate, Bleached	140.00/147.50	145.00/155.00	140.00/142.50§		
Semi-bleached Sulfate	140.00/ — *		135.00/ —		
Sulfate, Unbl.	100.00/ —	100.00/125.00	$100.00/105.00§	$105.00/135.00	100.00/ — §
Sulfite, Blchd.	140.00/ —	140.00/145.00	140.00/ —	140.00/ —	140.00/145.00
Sulfite, Unblchd.	125.00/132.50	135.00/ —	115.00/ — §	120.00/125.00	115.00/ — §
Sulfite, Unbl'd (Glassine)	132.50/ —	139.00/ —	119.00/ — §		
Soda, Blchd.	140.00/ — *			Delivered Basis	
Sulfite Screenings	45.00/ —				
Stand. News, Sideruns	92.50/ — *	80.00/ 85.00			

* OPS Ceiling, CPR 49. ‡ F.o.b. Shipping Point. § On Dock Atlantic Ports.
† Midwestern markets.

Boards Deld., per ton (10 tons or over)

Filled News	$87.50/ —
Plain Chip	85.00/ 90.00
Blchd. Mla. L-d. Chip	140.00/142.50
White Pat. coated .020	160.00/162.50
Kr. Liner 42 lb. M sq. ft. $2.47	117.50/ —
Kr. Corr. .009 M sq. ft. $1.59	122.50/ —
Binders Boards	133.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4-Ctns.
	per cwt.
100% Rag. Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.40/ 19.50

Ledgers	4 Ctns.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.90/$24.65
No. 2	22.40/ 22.85
Machine Coated	
Extra No. 1	$21.35/$21.65
No. 1	19.15/ 19.65
No. 2	16.65/ 17.40
Uncoated	
No. 1 Antique (Watermarked)	$19.15/$19.65
Offset	18.15/ 19.15
A Grade E. F.	18.40/ 18.65
A Grade S. C.	18.90/ 19.15
B Grade E. F.	17.40/ 18.15
B Grade S. C.	17.90/ 18.65

‡ Indicates a price change.

WASTE PAPER MARKET

Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. See TRENDS.

	New York Dec. 8	Philadelphia Dec. 12	Boston Dec. 5	Chicago Dec. 1
No. 1 Mixed Paper	$9.00/ 10.00	$8.00/ 10.00	$9.00/ —	$10.00/ —
No. 1 News	14.00/ 15.00	12.00/ 15.00	15.00/ —	17.00/ —
Over-issue News	21.00/ 23.00	18.00/ 20.00	18.00/ 20.00	20.00/ —
Mill Wrappers	14.00/ 15.00	8.00/ 10.00	12.00/ —	13.00/ —
Corrugated Containers	17.00/ 18.00	15.00/ 18.00	18.50/ 19.00	20.00/ —
Double Kraft Ld. Corr. Cuts	31.00/ 40.00	35.00/ 40.00	25.00/ 40.00	35.00/ 40.00
100% Kraft Corr. Cuts	45.00/ 55.00	45.00/ 55.00	35.00/ 45.00	50.00/ —
Used Sugar & Flour Bags	35.00/ 45.00	28.00/ 32.50	25.00/ 35.00	30.00/ —
Triple Resorted Br. Kraft	40.00/ 45.00	35.00/ 40.00	20.00/ 35.00	30.00/ —
New Br. Kraft Env. Cuts	65.00/ 70.00	55.00/ 70.00	65.00/ 75.00	50.00/ —
New Br. Kraft Bag Cuts	55.00/ 60.00	47.50/ 52.50	45.00/ 55.00	50.00/ —
No. 1 Gdwd. Shvs.	20.00/ 30.00	17.00/ 20.00	25.00/ 35.00	27.00/ —
White Newsblanks	65.00/ 70.00	62.50/ 70.00	65.00/ 75.00	50.00/ —
No. 1 Flyleaf Shvs.	30.00/ 35.00	25.00/ 35.00	30.00/ 45.00	30.00/ —
No. 1 Soft Wht. Shvs.	75.00/ 85.00	60.00/ 70.00	75.00/ 85.00	75.00/ —
Super Soft Wht. Shvs.	85.00/ 95.00	65.00/ 80.00	95.00/100.00	85.00/ —
Hd. Wht. Shvs.	95.00/100.00	90.00/100.00	85.00/100.00	90.00/ —
Hd. Wht. Env. Cuts	115.00/125.00	105.00/125.00	105.00/120.00	100.00/ —
New Manila Env. Cuts	65.00/ 72.00	65.00/ 80.00	75.00/ 85.00	40.00/ —
Col. Tab. Cards	50.00/ 60.00	45.00/ 57.50	40.00/ 50.00	50.00/ —
Manila Tab. Cards	70.00/ 80.00	70.00/ 80.00	70.00/ 85.00	60.00/ —
No. 1 Mixed Ledger	35.00/ 47.50	37.50/ 45.00	35.00/ 45.00	50.00/ —
White Ledger	52.50/ 57.50	50.00/ 60.00	52.00/ 60.00	65.00/ —
No. 1 Book & Mag.†	16.00/ 18.00	13.00/ 15.00	16.00/ —	15.00/ —
No. 1 Rep'd. Hvy. Books‡	26.00/ 35.00	18.00/ 22.50	24.00/ 35.00	27.50/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis

No. 1 White Shirts	$15.00/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.50
Blchd. & Unblchd. Underwears	16.00/ 16.50
Blchd. Canton Flannels	15.00/ 15.50
No. 1 Light Silesias	12.50/ 13.00
No. 1 Light Prints	8.25/ 8.50
No. 1 Blue Overalls	11.00/ 11.25
Suntan Khakis	8.00/ 8.50
Fancy Shirts	7.50/ 7.75
Indigo Blues	7.25/ 7.50
Mixed Khakis	5.50/ 6.00
Corduroys	6.00/ 7.00
Cottonades	6.00/ 6.50
No. 1 Washables	5.00/ 5.25

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.50/$4.50
Cotton Pants & Overalls	2.25/ 3.00
Thirds and Blues, Repacked	1.75/ 2.00
No. 1 Roofing Rags	1.00/ 1.05
No. 2 Roofing Rags	.90/ 1.00

Bagging
(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$4.25/$4.75
Heavy Wool Tares	4.50/ 5.00
Foreign Scrap Burlap	4.00/ 4.50
Austr. Wool Pouches	5.00/ 6.00
Domestic Manila Rope	6.00/ 6.50
No. 1 Sisal Strings	6.00/ 6.50

COTTON LINTERS

Memphis Market
F.o.b. Oilmills

		Dec. 9 cents per lb.
Grade 2		13.25/ 11.50
3	1st cut	11.00/ 9.75
4		9.00/ 6.50
5		6.00/ 4.50
6	2nd cut	4.00/ 3.75
7		3.75/ 3.50

PRICES OF MATERIALS

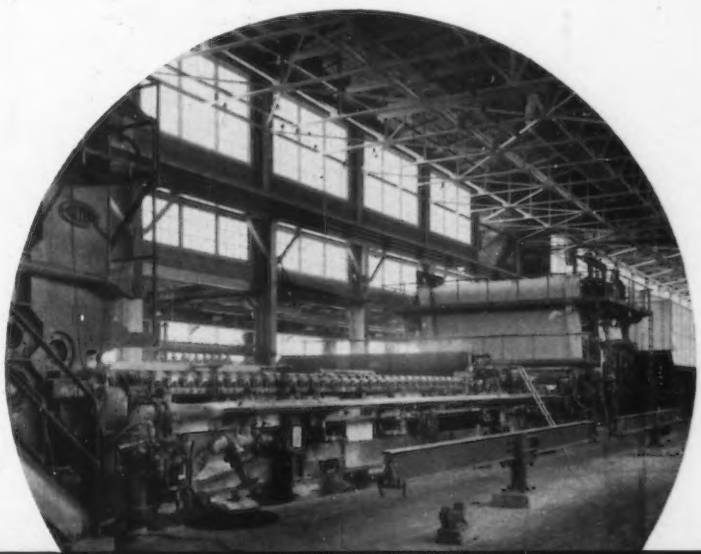
Aluminum sulfate:		
cml. bags, wks.	cwt.	1.65
iron-free, c.l.	cwt.	3.25
Alcohol, ethyl:		
tax free, dms. c.l.	gal.	1.01 / 1.05½
deld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms. c.l. fit. alld.	gal.	.44
Casein, acid prec.:		
dom. sh. pt. c.l.	lb.	.28 / .40
imp. ex. dock	lb.	.18 / .25
Caustic soda:		
c.l. wks. sold, 76% cwt.		3.35
flak. & grd. 100-lb. drums.		3.75
liquid 50% tanks		2.55
liquid 70% tanks		2.65
China clay:		
dom. air-float, c.l. wks.	ton	10.00
water-washed, lump, filler		11.00
coating		17.60 /30.50
imported, ex. whse.	short ton	15.20 /28.35
Chlorine:		
single-unit tanks, works	cwt.	2.70
multi-unit	cwt.	3.20 / 4.40
Formaldehyde:		
USP, inh. dms. c.l. wks.	lb.	.0625/ .0675
l.c.l., E. wks.		.0675/ .0725
Fuel oil:		
Bunker C, No. 6 hvy. tanks, N.Y. harbor	bbl.	2.10 / —
light, tanks, refinery	bbl.	2.00 / 2.25
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss.	lb.	.23½/ .26½
Lime:		
hydrated, bags, wks.	tons	13.50
Rosin:		
B gum, drms, c.l. Savan.	cwt.	7.00 / —
K, M, N	cwt.	7.20 / 7.42
FF, wood, do.	cwt.	4.10 / 6.50
Rosin size:		
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	6.25 / 6.30
Salt cake:		
dom. bulk, c.l. wks.	ton	17.00
wks. frt. all	ton	20.00 /22.00
Soda ash:		
light, 58%, bags, wks.		1.50
bulk	cwt.	1.20
Sodium silicate, 40°:		
turbid. c.l. wks.	cwt.	1.30 /
l.c.l. wks.		1.60 / 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.21
l.c.l. do.	lb.	.21½/ .22
Soybean, protein:		
chem. isol, wks., c.l., bags.	lb.	.23½/ .24¼
Sulfuric acid:		
60° Be. cbys. c.l. wks.	cwt.	1.75 / —
l.c.l. wks.	cwt.	2.05 / 2.85
Sulfur:		
crude, c.l. mines, contract,	long ton	21.00 /22.00
f.o.b. vessels Gulf		22.50 /23.50
Sulfur dioxide:		
liquid, coml. cyl. wks.	lb.	.09
multi-unit cars	lb.	.0535
Starches:		
pearl corn, bags, c.l. wks.	cwt.	6.39 / —
white, dextrines, c.l. wks.	cwt.	7.78 / —
potato, Idaho, c.l. wks.	cwt.	8.60 / 8.85
potato, Maine, f.o.b. wks.	cwt.	10.50 /11.00
potato, imported O.D.	bags	8.60 / 8.90
Talc:		
domestic, sacks, c.l. wks.	ton	25.00 /30.00
Titanium dioxide:		
anastase, c.l. deld., bags.	lb.	.21 / .21½
l.c.l. deld.	lb.	.22 / .22½
rutile, c.l. deld.	lb.	.23 / .23½
l.c.l. deld.	lb.	.24 / .24½

SUPPLIERS

FRANK W. EGAN & CO., Bound Brook, N. J., announces the appointment of W. H. Willert to their technical staff. Graduating from Michigan State College in 1942 with a chemical engineering degree, Mr. Willert has specialized in the design and development of plastics extrusion equipment and extruded products. He holds several patents and is author of articles which have appeared in the Plastics Industry trade journals.

W. H. Willert

(Continued on page 46)



Another *Ferguson* paper mill

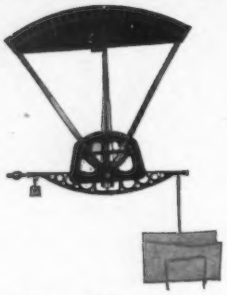
Another Ferguson pulp and paper mill means another successful operating facility . . . it represents low investment and operating costs.

Our consultants and engineers, who keep abreast of the newest methods and techniques, will be glad to study your requirements and make recommendations accordingly.

Let Ferguson specialists work with your engineers and technicians—as a team—to give you an economical plant at lower cost.

THE H·K·FERGUSON COMPANY
ENGINEERS AND BUILDERS

THWING-ALBERT WALL TYPE BASIS WEIGHT SCALE



Indicates ream weight of paper from a single sheet. Scale ranges from 25 grams to 200 pounds. Features anti-friction bearings and truss beam construction. Dead beat motion allows minimum oscillating. Also available as a differential scale. Ideal for moisture content determinations.

THWING-ALBERT INSTRUMENT COMPANY
5366 Pulaski Avenue
Philadelphia 44, USA 104

DE LAVAL liquor pumps

DE LAVAL *Steam Turbine Company*
TRENTON 2, NEW JERSEY

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK

Manufacturer of

Machinery, and equipment for Mechanical and Chemical Pulp Mills and Special Machinery

NEW LITERATURE

CED and Economic Research in College-Community Centers. (Booklet) Describes goals of CED, how it operates, locations of different centers with illustrations of various committees, colleges, staff, etc. Committee for Economic Development, 444 Madison Avenue, New York 22, N. Y.

A Guide to Sales Quota Setting. (63 page Lithoprint, Paperbound Book) Examines quotas in light of market and product characteristics; list types in common practice; describes specific purposes such as profit control, etc. Also discusses uses of sales quotas in detail. By John E. Ullmann. Price $3.00. Chemonomics, Inc., Inc., 400 Madison Avenue, New York 17, N. Y.

How to Improve Federal Tax Policy. (Pamphlet) Presents recommendations of MAPI to Joint Committee on Internal Revenue Taxation. Discusses basic tax principle, excess profits tax, carry-over and carry-back, corporation and personal income tax, capital gains and double taxation of dividends. Machinery and Allied Products Institute, 120 S. La Salle street, Chicago 3, Ill.

Indigenous Cellulosic Raw Materials for the Production of Pulp, Paper and Board. (Indian Forest Bulletin 161) Part XI —Chemical Pulps from Andropogon contortus, Linn. (Kasal grass) by R. V. Bhat and M. G. Karnik, Cellulose and Paper Branch, Forest Research Institute, Dehra Dun. Reprinted from Volume 78, The Indian Forester, pp. 331-338, 1952, contains tables on proximate analysis, soda digestions and sulphate digestions of Andropogon contortus and strength characteristics of standard sheets. Price As.-/10/- or 1 sh. Published by Manager of Publications, Delhi, India.

International Boxer. (Bulletin 101) Provides sales copy and picture-sequence showing how retractable anvil stapling head works in closing corrugated and fibre cartons from outside after filling. International Staple & Machine Co., 809 East Herrin street, Herrin, Ill.

Producers of Wealth. (Booklet 117-30465-D218) Illustrated record of the Caterpillar company, the dealer, the user-owner, the machine being built, the machine producing wealth. Caterpillar Tractor Co., 600 W. Washington street, Peoria, Ill.

Slip Stem Regulating Valves. (Specification Sheet 422) Provides technical information, diagrams, mounting dimensions and description of Type 31 Double Seated Valve in straight-through and angle positions for either lever-and-weight or lever-and-float operators. Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Wayne & Windrim Avenues, Philadelphia 44, Pa.

A. O. Smith Safety Floor Grating and Stair Treads. (Bulletin RR-255) Contains technical data, selection table and chart also standard tread depths—dimensions in inches. A. O. Smith Corp., Safety Grating Div., 3533 N. 27th street, Milwaukee 1, Wis.

Texrope Grommet V-Belts. (Bulletin 20B-6497A) Includes sales copy and cross-sectional illustrations of "Texrope" gripping pressure under all load conditions. Allis-Chalmers Mfg. Co., 994 S. 70th street, Milwaukee, Wis.

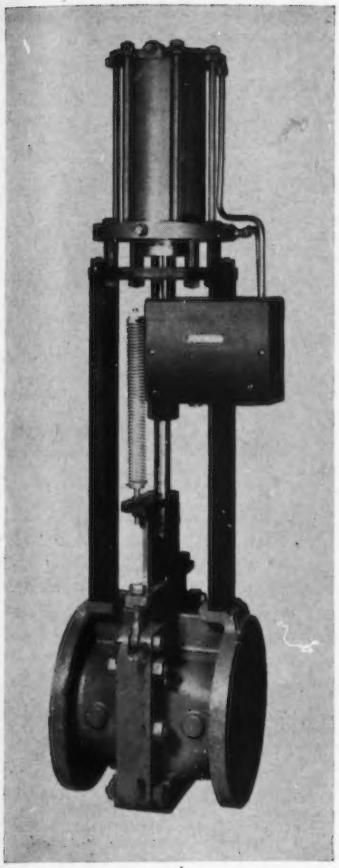
Taylor Technology. (Bulletin—Volume 5) Handy index of all previous issues both numerically and by subject matter; also firms, societies, bureaus and authors. Taylor Instrument Companies, 95 Ames, Rochester, N. Y.

Time-Cycle Controller. (Bulletin C305) Contains illustrations of various models, describes principle of operation in detail; also information on application in timing industrial process operations. Bristol Co., Sales Promotion Dept., Waterbury 20, Conn.

Spiratube—A and R. (Catalog C2-4) Contains illustrated sales copy, detailed specifications, air friction charts, data on oil and chemical resistance, application information. Flexible Tubing Corp., Guilford, Conn.

Warren Rubber Lined Chemical Pumps Type DB. (Bulletin WQ-212) Provides specifications, dimensions, sectional and external views; also construction features. Warren Steam Pump Co., Inc., Warren, Mass.

Wire Cloth, Filter Cloth, Fabricated Products. (126 p. Catalog) Contains specifications, characteristics and uses of wire and filter cloth; scope of fabrication service offered; pertinent data for designing process units for above fabrics; also reports on 18 months of research into flow characteristics and particle retentivity of metallic filter cloths conducted at Columbia University in New York. Multi-Metal Wire Cloth Co., Inc., 1350 Garrison Avenue, New York 59, N. Y.



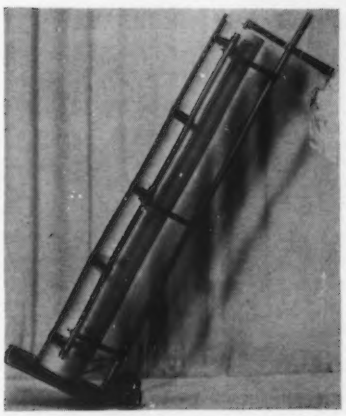
Piston Positioner

Accurate positioning of cylinder-operated devices is the function of the new Poweractor positioner, introduced by Foxboro Co., Foxboro, Mass. Operating from a standard 3-15 p.s.i. pneumatic controller signal, it applies a high pressure, pneumatic differential across a cylinder piston, sufficient to produce the position demanded by the controller.

Designed especially for use with the Foxboro Stabiload Cylinder the Poweractor unit will position equipment requiring long stroke and power, such as large size control valves, dampers, variable speed drives, and pulp stock valves, through pneumatic cylinder (or springless diaphragm) operating mechanisms.

This positioner is a force balance type instrument, connected to the cylinder piston rod through a bracket and spring assembly. Every change in the controller signal produces a corresponding position change of the piston, and the positioner automatically returns to a null balanced condition.

It is stated that the positioner is capable of handling up to 150 p.s.i.g. air supply, depending upon cylinder rating, and delivers, for example, 12 SCFM air flow with a 50 p.s.i.g. supply. It responds to a change in signal pressure of ¼ of 1 percent of range and positions a piston within 1 percent of its total stroke under normal loading conditions. Direction of piston movement with respect to a signal pressure may be reversed by simply inverting the positioner. Component parts are enclosed in a weatherproof case, measuring 6″ x 7¼″ x 3⅝″. Air connections are ¼″ NPT.



Portable Paper Cutter

To provide convenient handling and dispensing of large and long rolls of wrapping paper, the B-Line Portable Paper Cutter has been developed by the S. J. Bina Co., Grand Forks, N. D. It is designed to save time, labor, paper, and money in such operations as product wrapping and car lining.

It is constructed of steel, yet can be handled easily by one man. It features a turn-table base mounted on Timken ball-bearings, and has rubber-tired wheels with oilite bearings. Channel arms are adjustable to vary the position of the paper cutter bar. Adjustable spring clamps permit tightening of cutter bar to insure uniform cutting of the paper.

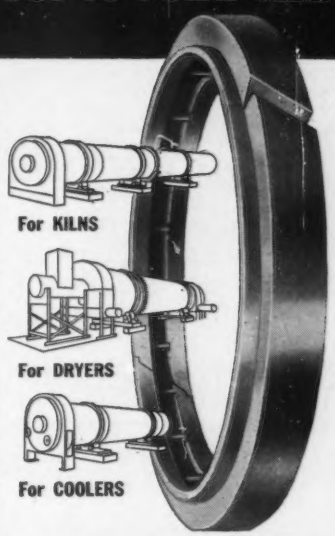
The portable cutter is available in three models and will handle paper rolls of 36″, 48″, 60″, and 72″ lengths with diameters from 9″ to 15″.

$500,000 Drier Assembly Arrives at Harmac

Completion of the $20 million expansion of the Harmac Pulp Mill of the MacMillan organization has advanced another step with the arrival of a $500,000 drier assembly at the company's wharf in Nanaimo, B. C.

The unit consists of 375 tons of crated machinery and includes component parts from Sweden, eastern Canada, Sweden and the U.S.A.

Reduce Production Losses
DUE TO DOWN TIME



CRANE WHEELS • SPINDLES • COUPLING BOXES • CRAB COUPLINGS • MILL PINIONS
GEARS • PINIONS • METAL TIRES • TRUNNIONS • SHEAVES • SPROCKETS • CRUSHER PARTS • RACKS AND PINIONS

REPLACE WORN OR CRACKED TIRES WITH
Stroh
DIAGONALLY CORED SPLIT
TIRES

Stroh diagonally cored split tires can be installed on kilns, coolers or dryers in *as little as 36 hours*—including reaming of holes and riveting. No need to tear out sections or disturb shell alignment. Mating surfaces, welded after installation, cannot loosen under action of load or heat. Welded joints do not "hump" and roll smooth in operation.

Write today!

Stroh PROCESS STEEL CO.
Established 1916
PITTSBURGH 12, PENNA., U. S. A.
WALLACE YOUNG, South American Representative
Manufacturers of STROH ALLOY CAST TOOTH GEARS
CAST OR CUT TOOTH CARBON STEEL GEARS

It will speed the reply to your inquiry to mention Paper Trade Journal.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

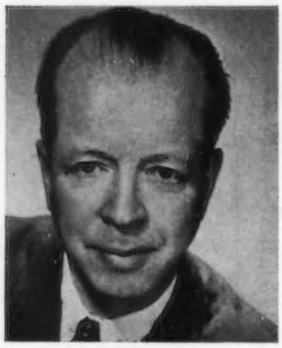
MISCO
STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
DETROIT 7, MICHIGAN

CAMBRIDGE
INDUSTRIAL MODEL
DIRECT READING
ph METER

Its use makes possible improvement in paper quality, lower costs and reduction in corrosion of machinery.
Send for Bulletin 910 N.A.
CAMBRIDGE INSTRUMENT CO., INC.
3702 Grand Central Terminal, New York 17, N. Y.

SUPPLIERS

(Continued from page 43)



J. H. Bruun

HOOKER ELECTROCHEMICAL CO., Niagara Falls, N. Y., has named J. H. Bruun director of research, according to a joint announcement made by R. L. Murray, president of the company, and J. H. Babcock, vice-president in charge of development and research. Dr. Bruun will have charge of all research activities including basic research, pilot plant development, and product application.

C. G. Caldwell

NATIONAL STARCH PRODUCTS, INC., 270 Madison Ave., New York, has elected Dr. Carlyle G. Caldwell assistant vice-president. A native of Little Rock, Ark., Dr. Caldwell was graduated from Iowa State College in 1936 and received a Ph.D. degree in chemistry from his college in 1940. He then joined National's research staff where he has been research director since 1948.

DILTS PILOT PLANT "CONTRCOATER" REVERSE ROLL-COATER IN ACTION

Left to right: Pete Litwak, Dilts Machine Works; George Morin, Chicopee Mfg. Co.; John Baymiller, Armstrong Cork Co.; Chester Litwak, Dilts; R. W. Kugler, Dow Chemical Co.; K. A. Arnold, St. Regis Paper Co. and R. J. Jacobs, Dilts Machine Works. To the rear—first man unidentified and Edward J. Heiser, Dow Chemical Co.

A. M. MEINCKE & SON
INC.
Materials for Paper Making
A. M. MEINCKE & SON, INC. CHICAGO, ILLINOIS
7 SO. DEARBORN ST.
CHICAGO, ILL.

MILTON ROY CO., Philadelphia, Pa., manufacturers of controlled volume pumps and automatic chemical feed systems, has announced the appointment of the Tower Equipment Co. as representatives in the State of Washington. Tower Equipment Co. will cover all but the southeastern counties.

FINANCIAL

Champion Paper & Fibre Co. reported that second quarter sales for the period ended September 30 were down about 3 percent from the June quarter, reflecting the relatively soft paper market of March through August, 1952.

Demand, the report stated, has strengthened materially since early September, and the company's operations are now running full.

Six months ended September 30:

	1952	1951
*Earned a common share.	$1.96	$2.16
Net sales & other income.	57,282,111	60,284,892
Profit before taxes.....	11,295,122	13,991,801
Federal taxes	6,740,643	9,015,249
Net profit	4,554,479	4,976,552
Number common shares..	2,204,000	2,204,000

Quarter ended September 30:

	1952	1951
*Earned a common share.	$0.93	$1.05
Net sales & other income.	28,195,270	30,356,892
Profit before taxes.....	4,981,521	6,837,391
Federal taxes	2,811,209	4,410,679
Net profit	2,170,312	2,426,722

*After preferred dividend requirements.

Crown Zellerbach Corp. reports net income for its second fiscal quarter, the three months ended October 31, 1952, amounted to $5,668,981 or $1.83 a common share on sales volume of $67,264,144.

For the six months ended October 31, 1952, net income was $10,817,545 or $3.48 a common share, compared with net of $11,965,294 or $3.88 a common share in the like 1951 period. Net sales and other revenues increased to $126,699,574 from $124,058,977.

Chiefly reflected in the improved sales was the sale of about 20,000 tons of newsprint purchased from the Elk Falls Co., Ltd., on which Crown Zellerbach realized a nominal profit. Another factor was the corporation's increase of $10 a ton in its price of newsprint which took place on July 18, 1952. Working capital as of October 31, 1952, amounted to $77,716,628.

Nekoosa-Edwards Paper Co. has declared a dividend of 40 cents and a special dividend of 40 cents per share. Dividends are payable December 18 to shareholders of record at the close of business December 1, according to a statement by John E. Alexander, president and general manager.

These year-end dividends bring the total payments for the year to $2. Sales and revenues for the first nine months of 1952 totaled $18,375,000, a 4 percent increase over the previous year's first three quarters. However, due to increased manufacturing costs, profits before income taxes totaled $3,870,000, a slight drop from 1951, Alexander said.

Greater income tax rate for 1952 reduced net income for the first three quarters to $1,370,000, compared with $1,441,000 in 1951.

Union Bag & Paper Corp. announces that the company has set a subscription price of $42 per share for offering to stockholders of 253,008 shares of additional common stock. The offering, which will be made in ratio of one share for six shares held was made to stockholders of record November 28, and will expire December 15.

National Container Corp. and subsidiaries report for the nine months ended September 30, 1952, consolidated net income of $3,076,862, after provision for estimated federal taxes based on income, compared with $7,637,180 in the first nine months of 1951. The earnings per common share for the respective periods (1952 after $449.964 preferred dividends) were 95 cents and $2.77.

Consolidated net sales for the nine months ended September 30, 1952, were $38,192,237, compared with $55,392,116 for the same period of 1951.

Comparative figures for the nine months follow:

	9 Mos. Ended Sept. 30	
	1952	1951
Consolidated Net Sales...	$38,192,237	$55,392,116
Consolidated Net Income before taxes	4,847,712	18,905,955
Consolidated Net Income, after estimated provision for Federal Income and Excess Profits Taxes and current tax adjustments	3,076,862	7,637,180
Dividends on preferred stock	449,964	.....
Net Income available for common stock	2,626,898	7,637,180
Net Income per share of common stock	.95	2.77

Great Lakes Paper Co., Ltd., for the first nine months of the year, net slumped to $2,021,237 from $3,464,729 in the same period last year.

Operating profit dropped to $5,808,078 from $8,589,695 and after deducting interest on funded debt, depreciation and pension plan provisions, profit before taxes amounted to $4,421,237, as against $7,418,729. Provision for income taxes amounted to $2,400,000, as against $3,954,000. After deducting $31,805 as premium on retirement of preferred A shares and bonds $1,989,432 was transferred to surplus.

Last year in the same period the company set aside $200,000 for bad debts and deducted $72,654 as a premium on retirement of shares and bonds, transferring $3,192,075 to surplus.

PULP
PAPER

NORDICUS
INCORPORATED
500 FIFTH AVENUE
NEW YORK 36, N. Y.

SELLING
AGENTS

MERKOR
Non-Returnable, Durable standard mill core.

GARTEX
Returnable and Non-Returnable extra strong mill core for regular and special needs.

ANY LENGTH, DIAMETER AND THICKNESS

Write for samples and prices

MERCER
PAPER TUBE, INC.
655 WEST INGHAM AVE.
TRENTON, NEW JERSEY
NEW YORK OFFICE—500 5th AVE.

GOVERNMENT

R. A. MacDonald Resigns NPA

Richard A. MacDonald resigned as administrator of NPA effective December 15. Horace B. McCoy, deputy administrator, was named acting administrator by Secretary of Commerce Sawyer.

An official of Crown Zellerbach Corp., Mr. MacDonald will return to private business.

In addition to his duties with NPA, Mr. McCoy has been director of the Office of Industry and Commerce, and acting director of its newly-created Office of Distribution.

Continuous Forms Expansion Program Well Under Way

WASHINGTON, D. C.—Completion of the eight million dollar expansion program of the continuous forms industry is now past the halfway mark.

In a meeting with industry members, NPA said that register bond paper and carbon tissue are in ample supply; supplies of fine paper showed a 12 percent increase during the first eight months of 1952 over the same part of 1950.

Detailing the progress of the expansion program, NPA spokesmen said as of the third quarter, more than five million dollars worth of buildings and equipment were installed.

Colin Gardner III Quits WSB

Colin Gardner III, vice-president of Gardner Board and Carton Co., Middletown, Ohio, was one of the seven industry members who quit the Wage Stabilization Board in protest to President Truman's action in the soft coal wage case.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1952	Nov. 8 90.4	Nov. 15 91.4	Nov. 22 91.6	Nov. 29 88.7r	Dec. 6 92.4
1951	Nov. 10 99.4	Nov. 17 98.0	Nov. 24 94.9	Dec. 1 99.8	Dec. 8 98.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1951	99.3	101.3	101.9	102.8	102.2	100.1	88.6	97.7	94.3	100.3	98.0	90.0	98.0
1952	97.1	97.8	95.1	90.4	87.9	87.6	73.3	86.1	82.5‡	90.9‡	90.5‡		

COMPARATIVE YEARLY SUMMARIES

	1945	1946	1947	1948	1949	1950	1951	1952
Year to Date	89.8	101.6	104.7	97.1	88.7	96.4	99.7	90.6
Year Average	85.4	96.9	101.7	92.1	83.7	95.8	98.0	

‡ Preliminary.
r Revised.

PAPERBOARD OPERATING RATIOS†

1952	Nov. 8 97	Nov. 15 96	Nov. 22 98	Nov. 29 91	Dec. 6 95
1951	Nov. 10 86	Nov. 17 86	Nov. 24 75	Dec. 1 80	Dec. 8 86

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1951	102	105	104	105	104	103	84	94	86	87	82	75	94
1952	81	86	85	82	82	82	71	89	88	96	96		

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables *all* the ratios shown are on the basis of a normal 6 and 7 day capacity.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

Mando's Forestry Outlined

(Continued from page 18)

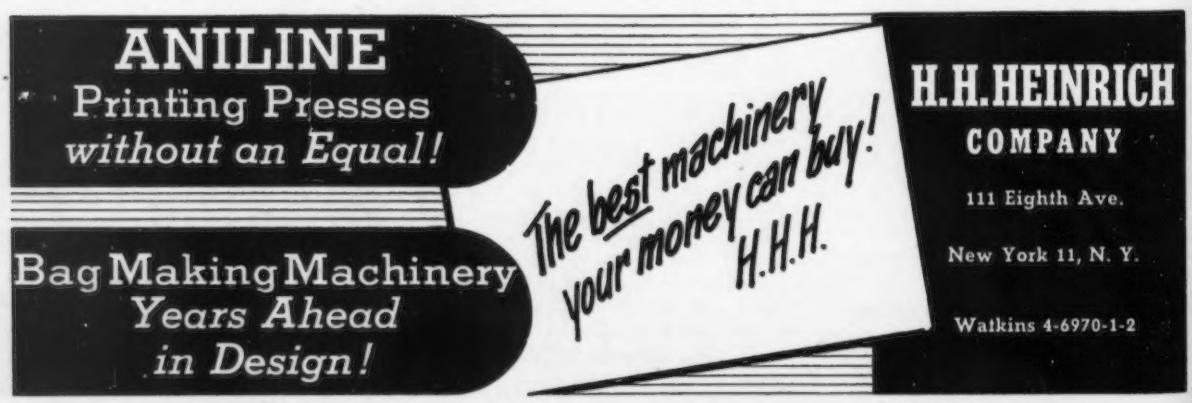
time, about 50,000 cords a year or about 20 per cent of the company's needs in Minnesota.

In Canada the firm's Limit wood, Mr. Amidon said, is cut by small contractors and company camps. Five-year operating plans have been completed or are nearly complete for about two-thirds of the concession areas. To date, the Canadian division has 22 sustained yield cutting units; these vary in size from 20,000 acres to 60,000 acres. The average size is 36,000 acres.

The annual cut for the first period varies from 2,500 cords to 20,000 cords and the average is 7,800 cords. A total of about 170,000 cords of wood annually, or 50 percent of the firm's Canadian production, comes from these sustained yield units, Mr. Amidon said.

About 40 percent of M and O's total needs in both Minnesota and Canada comes from the 52 sustained yield units.

"When the company completes its present cutting plans, it is estimated that it will obtain about 50 percent of its total needs from areas established on a sustained yield basis," Mr. Amidon said. Mr. Amidon said that the major reason why there has been such a spurt in industrial forestry within the last few years is because of the recognition that high cost pulpwood manufacturing facilities cannot be moved when the supply of raw material gives out, and therefore, a sustained supply of wood is essential to sound financing.

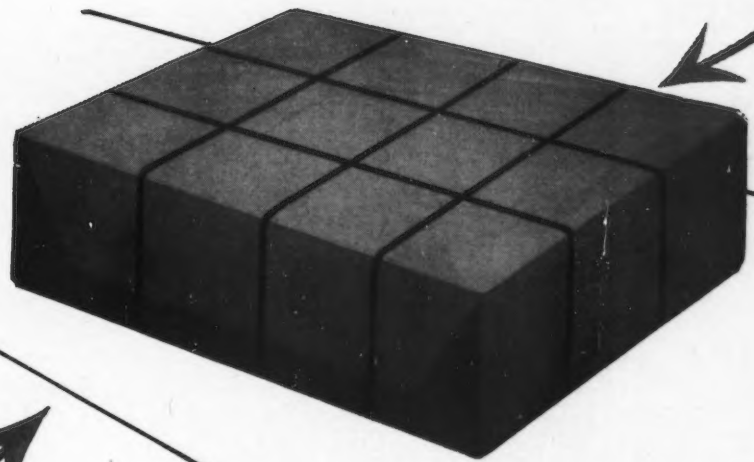


Lyddon & Co.

exporters of wood pulp
to all world markets

Parsons & Whittemore

paper exporters
wood pulp



London

Paris Zurich

Stockholm Oslo

Sousse Montreal

Buenos Aires Sao Paulo

250 Park Avenue, New York 17, N. Y.

Paper Trade Journal CLEARING HOUSE

HELP WANTED

MEN WANTED—POSITIONS OPEN

We can place—Asst. mgr. dissolving pulp-sulphite mill; night supts. paper and board mills; sales mgr. corrugated boxes; asst. supt. paper converting bag plant; methods and systems supervisor; tech. supt. to take full responsibility paper mfg., Cylinder and Fourdrinier machines on printing papers and specialties.

Chemists and chemical engineers; power plant supervisors; finishing foreman; laminating foreman; mechanical, plant and electrical engineers, designers and draftsmen; Cylinder machine foremen; salesmen industrial papers.

Supt. Fourdrinier board and paper mill, suplhite and groundwood envelope, hanging, coated book and offset papers, salary range $10,000-$12,000; supt. Fourdrinier mach. mill on printing papers, bristols, suplhite specialties, Salesman to sell board to jobbing houses in Metropolitan area; Polyethylene bag making production man; aniline press printer (South).

LIST YOUR APPLICATION WITH US. IT WILL BE CONFIDENTIAL.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St. Boston 8, Mass.
Phone: Liberty 2-6547 D-19

PLANT ENGINEER

Plant engineer to co-ordinate activities of design engineering firms and contractors during construction. Direct all engineering and maintenance in completed mill. Must co-ordinate and take care of both plants.

Mechanicsville Division (plant under construction): Yankee with secondary dryers, Fourdrinier machine. Facial grades, napkins, toweling, tissue, light weight and specialties.

Walloomsac Division, Walloomsac, N. Y.: Beloit 7 cylindor wet end and board machine. Set-up boxes, folding boxes and specialties.

Must have over all experience in paper mill maintenance, steam, power, etc. Replies will be held in strict confidence.

THOMAS A. GALANTE & SONS, INC.
Walloomsac Paper Mills Division
P. O. North Hoosick, New York D-19

WANTED

Experienced MACHINE TENDER on Fourdrinier Machine making 9 pt. corrugating.

SPECIALTY PAPER AND BOARD CO.
24½ Van Houten Street, Paterson, N. J.
D-19

MECHANICAL ENGINEERS WANTED FOR STAFF AND SALES

Opportunities for interesting, well paid career with growing firm in heavy industrial machinery field. Ambitious men in their thirties are asked to supply background details. Reply to Box 52-516, Paper Trade Journal. D-19

HELP WANTED

ASSISTANT SUPERINTENDENT

Wisconsin paper mill has opening for an assistant superintendent. Because of continual expansion it has become necessary to locate a man who is capable of operating as an assistant superintendent. As this man would hold a position with a high degree of responsibility it is essential that he have practical experience and administrative ability. The individual we are looking for will probably have served in a similar position in another or smaller paper mill. The salary is, of course, open. In addition we have an excellent profit-sharing retirement program and the company assumes the cost of complete group insurance coverage. Apply by letter giving your complete background and qualifications to Box 52-514 care Paper Trade Journal. Your replies will be held in strictest confidence. J-9

WOODS EXECUTIVE

A new paper mill now under construction requires an executive with broad experience in large scale woods management and operations. Must possess administrative ability and be capable of organizing and directing all phases of a woods program. Experience in pulpwood procurement in Southern States is highly desirable. In addition, should have direct experience in management of pulpwood production activities.

Bowaters Southern Paper Corporation
Calhoun, Tennessee TF

PLANT ENGINEER

To coordinate activities of design engineering firm and contractors during construction. Direct all engineering and maintenance in completed mill. Should have not less than ten years experience in pulp and paper mill maintenance. Experience in maintenance of sulphate pulp production facilities necessary. Familiarity with groundwood and newsprint production desirable. Summarize experience. Bowaters Southern Paper Corp., Calhoun, McMinn County, Tennessee. TF

HELP WANTED

Mill located in eastern New York, producing paper board specialties, desires a Tour Foreman. Must have cylinder machine experience. Beater experience preferred, but not essential. Must have ability to handle help. Excellent opportunity for the right man. Interview can be arranged at convenient time. State qualifications and present salary in confidence. Apply to Box No. 52-501, c/o Paper Trade Journal. D-19

HELP WANTED

MECHANICAL ENGINEER

Wisconsin paper manufacturer has opening for a mechanical engineer. The man we will be interested in will be an individual who takes pride in his ability and wants to build a career with one company. He may be assured that he will receive competent supervision and leadership to help him realize his full potentialities. He must bring with him an excellent background in the theoretical aspects of his profession and the willingness to work. Industrial experience desirable but not essential. Salary is, of course, open. In addition, we have an excellent profit-sharing retirement plan for the person with an eye toward the future. Write complete employment and personal history to Box 52-515 care Paper Trade Journal. J-9

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 52-76 care Paper Trade Journal. TF

WANTED—An Assistant Superintendent and a Night Boss, also two machine tenders, for 2 machine mill running cylinder twisting tissue. Phone or write—Kelly-Forsythe Corp., Ithaca, N. Y. D-26

BACK TENDER—Capable cylinder man for specialties who can be developed to run machine, plenty of room for advancement with steady work and overtime. Address Box 52-506 care Paper Trade Journal. J-2

GRADUATE CHEMICAL ENGINEER for large specialty mill in New Jersey. Unusual opportunity with a Company making many grades. Write Box 52-504 care Paper Trade Journal. J-2

SUPERINTENDENT experienced in the manufacture of roofing and flooring felt. Excellent opportunity for man with practical experience. State age and complete background. Address Box 52-518 care Paper Trade Journal. D-19

SMALL PAPER MILL interested in Beater Men, Machine Tenders and Back Tenders, men 60 years of age or over in good health, please reply. Address Box 52-517 care Paper Trade Journal. D-26

SITUATIONS WANTED

BUSINESS EXECUTIVE—Returning to the United States. Life time experience Pulp, Paper and Board manufacture and Sales in Scotland, England, Canada, United States and Ireland. Graduate of LaSalle in Industrial Management. Also technical training in Inorganic Chemistry and Papermaking. Will be pleased to consider any worthwhile connection. Address Box 52-510 care Paper Trade Journal. D-26

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—75c a line. Minimum charge $3.75.

SITUATIONS WANTED—75c a line. Minimum charge $3.75. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—75c a line. Minimum charge $3.75.

WANTED—75c a line. Minimum charge $3.75.

OPPORTUNITIES—75c a line. Minimum charge $3.75.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional

Address replies to advertisements appearing under Box Number in care of
PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

SITUATIONS WANTED

ENGINEER

Twenty years varied experience in all phases of pulp and paper mill engineering, maintenance, operation, and design. Have practical paper making experience with excellent record for increasing production. Now employed as plant engineer and want position with future.
S.B. degree in engineering. Licensed professional engineer New York State. Address Box 52-484 Care of Paper Trade Journal, 15 West 47th Street, New York 19, N. Y. TF

REPRESENTATIVE—Would like to act as free lance sales representative for several mills in southland—commission basis. Address Box 52-509 care Paper Trade Journal. D-26

EXPERT CONSULTING SERVICES AND LABORATORY FACILITIES—Available for problems relating to waste paper; its stock preparation, de-inking, bleaching; plant engineering, design, construction, operational problems, in strictest confidence. Address Box 52-454 care Paper Trade Journal. TF

SUPERINTENDENT—With proven operating ability—sound practical and basic technical experience. Yankee or Fourdrinier type machines. Light and heavy specialty grades. Good knowledge of stock preparation—middle age—good health—references. Address Box 52-471 care Paper Trade Journal. TF

PAPER CONVERTING Mechanical Engineer, with seven years design and maintenance on bag, coating, waxing and printing equipment. Fifteen years machine and tool design. Would like to locate with a progressive converter in Southern California where I am now a resident. Address Box 52-490 care Paper Trade Journal. D-19

SUPERINTENDENT of coating mill with 30 years experience in coating, with proven ability, would make change with right company. Address Box 52-502 care Paper Trade Journal. D-19

PLANT ENGINEER—desires new connection in East or Mid-West, 20 years experience in Book, Bond and Groundwood Specialty Mills. Excellent references. Available in January. Address Box 52-508 care Paper Trade Journal. D-26

FOR SALE

FOR SALE—50" and 72" Cameron Slitters & Rewinders, with Motors, fully equipped. Address Box 52-489 care Paper Trade Journal. TF

FOR SALE

A.C. MOTORS (3Ph. 60Cy.)

HP	MAKE	TYPE	SPD.	WDG.
400	Al. Ch.		514	S.R.
400	G.E.	MT	450	S.R.
300	G.E.	IM	450	S.R.
200	West.	CW	600	S.R.
150	G.E.	ATI	600	Syn.
125	West.		277	Syn.
108	G.E.	IM	450	S.R.
100	West.		900	Syn.
100	G.E.	IK	1750	S.R.
100	West.	CS	1200	S.C.
75	West.	CS	900	S.C.
60	West.	CW	575	S.R.
30	West.	CS	1750	S.C.

Many Smaller A.C. Motors in Stock

TRANSFORMERS (1Ph. 60Cy.)

KBA	MAKE	PRI.	SEC.
1—8000(3Ph)	G.E.	25000	22000
3—200	Al.Ch.	22000	2200
3—100	West.	13200	2300
3—75	Kuhlman	13200	110/220
5—25	West.	6600	110/220

D.C. MOTORS: M-G SETS, ETC.

MOORHEAD ELECT. MACH'Y. CO.
P.O. Box 7991L — Pittsburgh 16, Pa. TF

CUTTERS FOR SALE

One Clark-Aiken 64" Simplex Cutter with Maxon Overlapping Layboy.
One Clark-Aiken 88" Simplex Cutter with Maxon Overlapping Layboy.
One Clark-Aiken 124" Simplex Cutter.
One Hamblet 112" Simplex Cutter with Moore & White Layboy.
One Moore & White 50" Simplex Cutter.

The Clark-Aiken Co.
Lee, Mass.
Tel.—Lee 700 & 701 D-26

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE—50,000 gallon capacity closed Redwood Water Tank. SEAMAN PAPER COMPANY, Otter River, Mass. TF

FOR SALE

FOR SALE—SPLITTER—Horizontal, pneumatic will handle wood 4'0" in length. New in '52. Never uncrated—immediately available. The Racquette River Paper Company, Potsdam, N. Y. TF

FOR SALE

42" Camachine No. 6.
48" Kidder model CH Slitter.
72" Cameron 8-10 Slitter.
75" Moore & White Upright 2-drum Rewinder.
100" Dillon Sheeter, with Back-stand.
Back-stands, made to order—any size.
THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.) TF

FOR SALE—Several Emerson #1B Jordans complete with motors. Inquire Box 52-496 care Paper Trade Journal. D-12

WANTED

WE WILL BUY
YOUR SURPLUS MOTORS
M.G. SETS • GENERATORS
Hoists • Compressors • Transformers
CASH or TRADE
WRITE FULL DETAILS FOR OUR OFFER BY RETURN MAIL
CHICAGO Electric Co.
1325 W. 22nd ST.
CHICAGO 8, ILL.

WANTED—A two, three or four color Rotary, roll feed, oil base printing press. Must take 48 inch roll of paper. MID-STATES GUMMED PAPER COMPANY, 2515 South Damen Ave., Chicago, 8, Ill. D-19

WANT TO BUY EQUIPMENT? We'll get it for you.
WANT TO SELL EQUIPMENT? We'll sell it for you.
LOOKING FOR A BETTER JOB? We'll get it for you.
LOOKING FOR COMPETENT HELP? We'll get that too.
all through the CLEARING HOUSE SECTION of
PAPER TRADE JOURNAL

FIBER RESEARCH AND SERVICE

Semi-Chem. and Chemical Pulp Processes

Pilot Plant Facilities

THE KINSLEY CHEMICAL COMPANY
Cleveland 11, Ohio

CHEMIPULP PROCESS INC.
500 WOOLWORTH BUILDING WATERTOWN, NEW YORK

CHEMICAL PULPING PROCESS

Hot Acid Cooking and Recovery Systems
Chemipulp—K-C Digester Circulating Systems
Chemipulp—K-C Improved Acid Plants
Digester Waste Liquor SO_2 Gas and Heat Recovery
Chip Pretreatment Preparatory to Cooking

Associated with
CHEMIPULP PROCESS LTD.
403 CRESCENT BUILDING MONTREAL, P. Q.

Pacific Coast Representative
A. H. LUNDBERG
308 ORPHEUM BUILDING SEATTLE 1, WASH.

FOR SALE

Four cylinder paper machine, trimming 76", cylinders 36 x 84", mounted in anti friction bearings. Couch roll 20" mounted in anti friction bearings. Primary press and three felt suction boxes. Nash pump. Three presses about 15" dia. rolls. Smoothing press 16" dia. R. C. roll. 24 dryers 42 dia., double deck. Two calender stacks 8 and 10 roll. 2 bowl upright reel. 4 drum Moore & White winder. Chandler Taylor steam engine, overhead line shaft. 6 right angle Black & Clawson indrive units. Machine can be inspected in operation.

70" trim Fourdrinier paper machine shut down one week, including four Valley Iron Works beaters, four washers with cast iron tubs, 1 Jones Majestic Jordan with 3/16" stainless steel filling, 2 duplex stock pumps, 2 Leith Walk screens, chrome plated, 3 Vortraps plus auxiliary. Fourdrinier wire 84" x 55 ft. 2 presses 17" dia. rolls, smoothing press, 21 dryers 36" x 80" with Ross Grewing air system, 6 roll calender, M. & W. two drum winder, size press, drum reel, available with drive and pumps. Can be inspected in present location.

FRANK H. DAVIS COMPANY
175 Richdale Avenue
Cambridge 40, Massachusetts

D-19

BUY UNITED STATES DEFENSE BONDS

For Sale—Immediate Delivery
16 Roll Super-Calender

Complete with 9 steel rolls and 7 paper rolls, 7½ H. P. starting motor and 75 H.P. operating motor, all attachments and electrical equipment. 8 extra paper rolls. Maximum web 62".

In good condition and priced right

Ben-Mont Papers, Inc.

Bennington, Vermont

D-26

FOR SALE

CAMERON SLITTERS
1—40" and 1—62" Type 26-3A Duplex.
1—42" Type 26-2A.
1—52" Type 10-10.
1—62" Type 9-5A with Tension Unwind and Electric Eye Control.
1—42" and 1—60" Type 6.
1—42" Type 40-2A
1—42" and 1—62" Type 40-1-AF
2—72" Type 10-11 Shear-Cut.
1—72" and 1—86" Type 8-10.
1—156" Type 18.

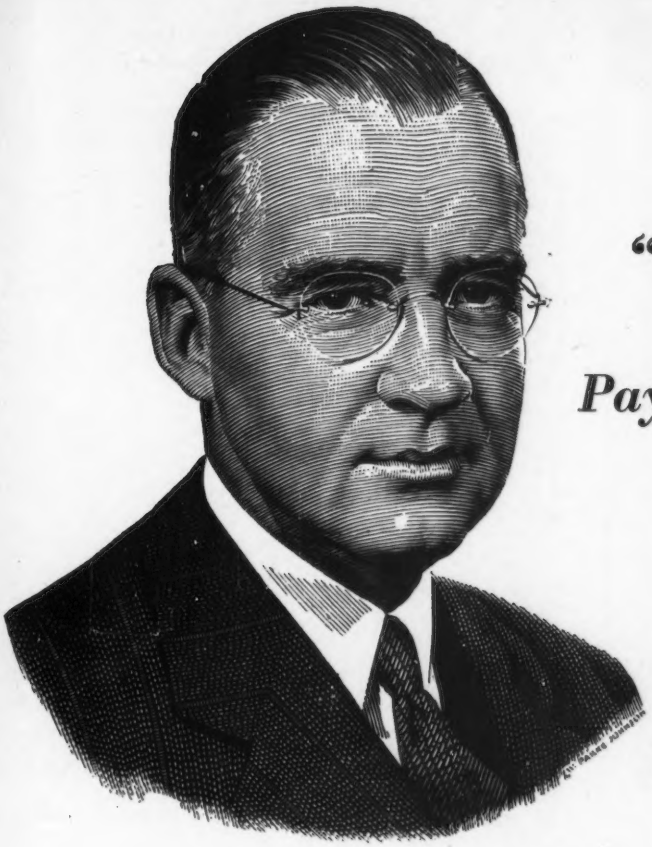
OTHER SLITTERS
1—62" Beck Duplex Rewind Razor Blade Slitter and Rewinder, Suitable for paper and plastics
1—40" Kidder Model SL, Shear-cut.
1—30" Meisel Series OP, Shear-cut.
1—30", 1—40" and 1—60" Langston Type A Shear-cut.

POWER PAPER CUTTERS
11—Seybold, 44" "Sixty" Auto-space, 56" 10Z, 44", 56" and 64" 6Z, 39" and 44" 20th Century, 57" Dayton, 44", 48" and 55" Holyoke.
3—Oswegos, 38", 44" & 50".
4—Oswegos, 38", 44", 50" and 63".
4—Acme, 32", 34", 36" and 50".
2—Smith & Winchester Undercut, 63" and 69".

MISCELLANEOUS MACHINES
Die Presses—
1—Seybold 24" x 38" U.A. Model
4—Sheridans, 18" x 33", 19" x 45", 22" x 60", 44" x 22"
1—14" 5 color Champlain, unit type Rotogravure Press.
1—60" Waldron 5 color Press. 3 rotogravure and 2 aniline units.
1—36" 3 color and 1—60" 2 color Hudson-Sharp 3A Aniline Printing Presses with 4A Sheeters.
1—30" Bagprint 3 color Aniline Printing Press. Roll to Roll.
1—12" Schultz Automatic Shelf and Wax roll machine. Rewind 25' to 250'.
1—Paper Converting Machine Co.'s dispenser type napkin machine, Model #237.
2—81" Dietz Toilet Paper Convertors.
1—55" Beck Sheeter with Electric Eye and Jogger Table Delivery.
1—36" Beck Sheeter with electric eye and Layboy
4—Waldron Embossing Machines. 2—29", 1—42" and 1—32" with Inking Device.
1—72" Squeeze Roll Waxing Machine.
1—48" and 1—60" Mayer Equalizer Waxing Machine.
1—24" Laboratory Coater, and Laminator. For waxes, Hot melts, water bath, etc.
1—Weber #5AG SOS Bag Machine range 5 to 16 pounds.
11—Parrish Bag Machines. Range ¼ to 16 lbs. SOS. 2—National Nail Bag Machines Range 2 to 25 lbs.
1—52" Clifton 3 roll Friction Calender.
1—75" Hamblet Single Rotary Sheet Cutter. With Erie Layboy and 24 Roll Backstands.
1—65" Mamco Single Layboy. Sheet Size 65" x 100".

PAPER MILL MACHINERY
1—66" Beloit 8 roll and 1—84" Holyoke 9 roll Stack of Super Calenders.
1—81" Hudson-Sharp Embossing Machine with Duplex Unwind and Duplex Pope Type reel rewind.
1—72" Waldron Pneumatically operated Brush Coater.
1—60" 16-roll Norwood Stack of Glassine Super Calenders. With Dampener.
1—86" Six Roll Stack of Machine Calendars.
1—62" x 60" Dilts Iron Tub High Speed Bandless Beater.
1—70" x 48" Jones Stainless Steel High Speed Beater.
3—E. D. Jones concrete tub Beaters. Roll size 57 dia. x 60 face.
1—H-7 Nash Hytor Vacuum Pump.
1—H-9 Nash Hytor Vacuum Pump with 75 HP., D.C. Motor.
1—#1 Valley Iron Works Screw Press.
1—Complete Double-deck Dryer Section. With one Creping Dryer 36" x 80" and 20—48" x 80" Dryers.
8—10—12—14 Plate Flat Packer Paper Machine Screens.
3—Wet Machines. 1—36" x 76" and 2—30" x 76".
1—Yar Yan Triple Effect Evaporators.
1—12' diam. x 140" face Beloit Yankee Dryer.
1—Lewis-Shepard POWERMASTER Single Telescope Stacker. 3000 lbs. capacity. Motor AC.
1—36" Bauer Model EM Double Disc Refiner.

GIBBS-BROWER CO. INC.
Please address reply to Room 902
21 E. 40th Street, New York 16, N.Y.
Telephone Lexington 2-5759



"...I urge employers to install the Payroll Savings Plan..."

M. B. FOLSOM
Treasurer, Eastman Kodak Company

"Continued saving will play an important part in protecting us against a renewal of inflation. The person who saves contributes to the nation's stability and to his family's security. He can now also obtain a higher return on his investment than he could in the past, because of the improvements in Defense Bonds now offered by the U. S. Treasury. I urge employers to install the Payroll Savings Plan wherever practicable, and employees to take advantage of such plan. By investing regularly in improved Defense Bonds, Americans serve their nation's interests as well as their own."

If your company does not have the Payroll Savings Plan—

Please tear out this page and send it to the "Big Boss." Urge that he read, carefully, Mr. Folsom's superb summary of the Payroll Savings Plan and its benefits for employers, employees and our country.

The following figures should be particularly interesting to anyone not familiar with the wide adoption and the steady growth of the Payroll Savings Plan:

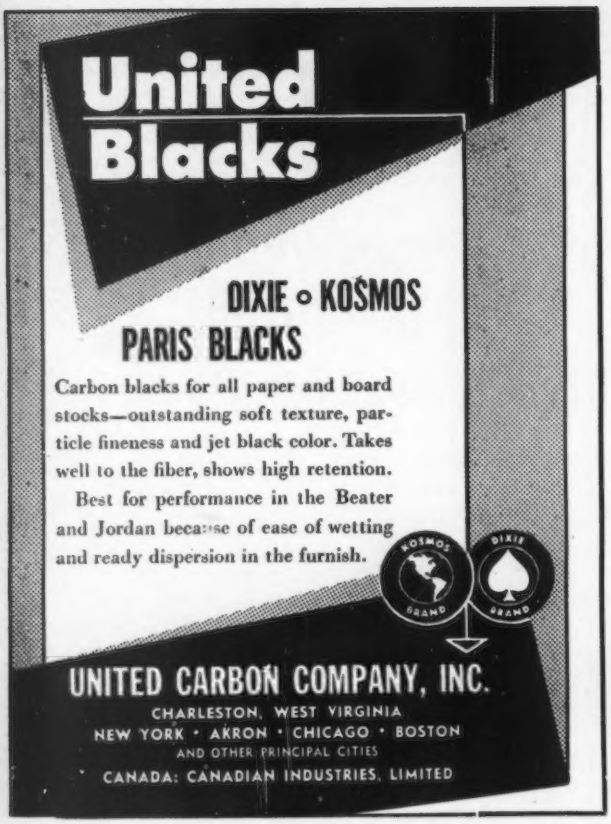
- 45,000 companies offer their employees the Payroll Savings Plan.
- since January 1, 1951, enrollment in The Plan has increased from 5,000,000 to 7,500,000.
- in some companies, more than 90% of the employees are systematic bond buyers—in literally thousands of other companies, employee participation runs 60%, 70%, 80%.
- payroll savers are putting aside $150,000,000 per month in U.S. Defense Bonds.
- the *cash value* of Series E Bonds held by individuals on December 31, 1951, amounted to $34.8 billion—$4.8 billion more than the cash value of Series E Bonds outstanding in August, 1945.

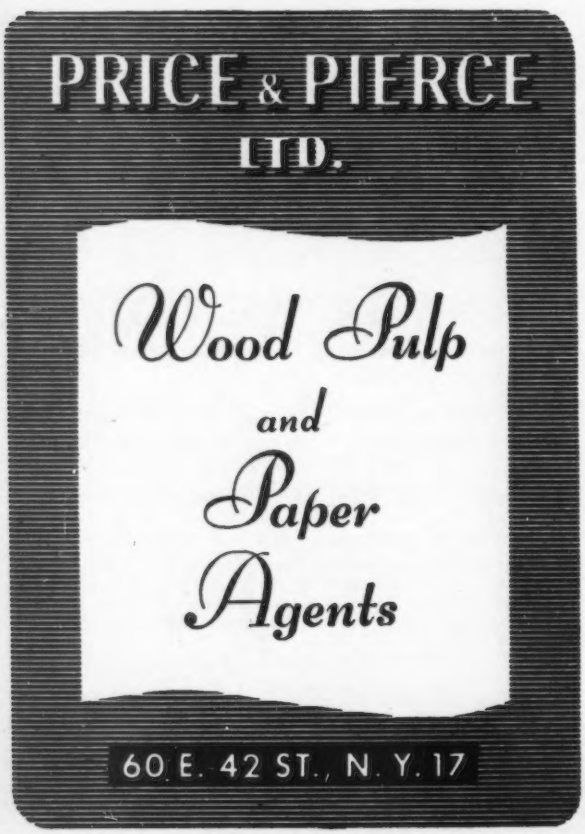
Phone, wire or write to Savings Bond Division, U.S. Treasury Department, Washington Building, Washington, D.C. Your State Director will show you how easy it is to install and maintain the Payroll Savings Plan.

If you have a Payroll Savings Plan, your State Director will show you how to build employee participation through a person-to-person canvass that puts an Application Blank in the hands of every employee. That's all you have to do—your employees will do the rest.

The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

PAPER TRADE JOURNAL


United Blacks
DIXIE ○ KOSMOS
PARIS BLACKS
Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.
Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.
KOSMOS BRAND
DIXIE BRAND
UNITED CARBON COMPANY, INC.
CHARLESTON, WEST VIRGINIA
NEW YORK • AKRON • CHICAGO • BOSTON
AND OTHER PRINCIPAL CITIES
CANADA: CANADIAN INDUSTRIES, LIMITED



WHERE TO BUY

ABRASIVES
Norton Co.
Simonds Abrasive Co.

ADHESIVES
American Cyanamid Company, Plastics & Resins Division
Diamond Alkali Co.
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
Morningstar, Nichol, Inc.
National Starch Products, Inc.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co.

ADJUSTABLE SHAKE MOTION
Manchester Machine Co.
Rice Barton Corporation

AGITATORS
Apmew, Inc.
Appleton Machine Co.
Biggs Boiler Works Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

ALLOYS
Michigan Steel Casting Co.

ANTIFOAM
American Cyanamid Company, Industrial Chemicals Division
Hercules Powder Co., Inc.
National Aluminate Corp.
Nopco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.
H. G. Weber & Co., Inc.

BALL MILLS
F. L. Smidth & Co.

BARK BURNER
Combustion Engineering Superheater, Inc.
Nichols Engrg. & Research Corp.

BARKERS AND CHIPPERS
Appleton Machine Co.
Carthage Machine Co.
Fibre Making Processes, Inc.
Improved Paper Machinery Corp.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Testing Machines, Inc.
Thwing-Albert Instrument Co.

BEARINGS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dodge Mfg. Corp.
B. F. Goodrich Co.
E. D. Jones & Sons Co.
Magnus Metal Corp.
The Moore & White Co.
The Noble & Wood Machine Co.
Rice Marton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
SKF Industries
Timken Roller Bearing Co.
The Torrington Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

BEATERS
Cowles Company

BEATERS AND JORDANS
Apmew, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
The Noble & Wood Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Midwest Fulton Mch. Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Bros. Belting Co.
Goodrich, B. F., Co.
Graton & Knight, Inc.
The Goodyear Tire & Rubber Company
Manheim Mfg. & Belting Co.

BINS, STORAGE
Biggs Boiler Works Co.
The Noble & Wood Machine Co.

BLEACHING AGENTS
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
Improved Paper Machinery Corp.
Jackson & Church Co.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BLOWERS
Buffalo Pumps, Inc., Roots-Connersville Div.

BOARD MACHINES
The Noble & Wood Machine Co.

BOILERS
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Combustion Engineering Superheater, Inc.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Testing Machines, Inc.
Thwing-Albert Instrument Co.

BRUSH ROLLS
M. W. Jenkins Sons, Inc.
Gus Reidel & Son

BRUSHES
M. W. Jenkins Sons, Inc.
Gus Reidel & Son
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.

BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

CALENDERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell United Co.
The Moore & White Co.
Perkins & Sons, Inc., B. F.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co., Industrial Chem. Div.
Hercules Powder Co.

CASTINGS
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblet Machine Co.
Lobdell United Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Fibre Making Processes, Inc.
Jeffrey Mfg. Co.

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS
American Cyanamid Co., Industrial Chem. Div.
Calco Chemical Co.
Calgon, Inc.
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gottesman & Co.
Hercules Powder Co.
Heyden Chemical Corp.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Midwest Fulton Mch. Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.

CLEANING MACHINES
Hydro-Silica Corp.

CLEANING MATERIALS
American Cyanamid Company, Industrial Chemicals Division
Diamond Alkali Co.
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLOTH
Lindsay Wire Weaving Co.

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dodge Mfg. Corp.
Farrel-Birmingham Co.
Hudson-Sharp Mch. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.

CONDENSERS
Biggs Boiler Works Co.
Midwest Fulton Mch. Co.

CONTRACTORS
Meyer & Sons Co.

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Pandia, Inc.

CONSULTING ENGINEERS
Ebasco Services
Frank W. Egan & Co.
Ferguson, H. K., Company
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
O'Donoghue, Roderick
Rust Engrg. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.

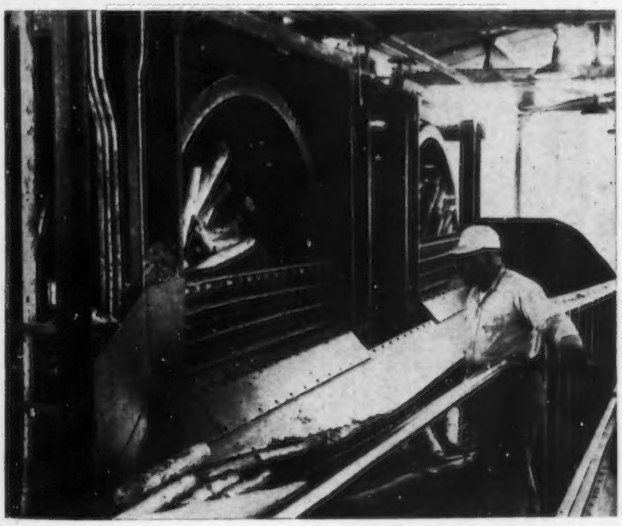
CONTINUOUS DIGESTER
Pandia, Inc.

CONTROLLERS
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Brown Instrument Co.
Johnson Corp.
Poirier Control Co.
Shartle Bros. Mch. Co.
Westinghouse Electric Corp.

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
Waldron, John, Corp.
Dilts Machine Works

BARK HARD OR SOFT WOODS UP TO 8' IN LENGTH WET . . . DRY . . . OR COMBINED DRY AND WET WITH F.M.P. WELDED M-BAR BARKING DRUMS



M-Bar—Hot Rolled

Exclusively used in F.M.P. drums
Welded and riveted to heavy ship channels

119—barking drum sales since 1947
(99—12' D. x 45' L.—11-12' D. x 67½' L.—9 misc.)

Barking drums can be furnished with long or short column steel frames to fit customer's requirements. Drumshells shipped completely shop-assembled.

Built-up drumshells and steel frames fabricated at Birmingham, Chicago, and Greenville, Pa.

FIBRE MAKING PROCESSES, INC.

Tribune Tower, Chicago 11 — Russ Bldg., San Francisco 4

MANUFACTURERS OF BARKING DRUMS SINCE 1915, WELDED DRUMSHELLS SINCE 1933

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette **Wax** **Photographic** **Jet Propulsion**

Condenser **Grease Proof** **Snap-out Forms** **Aero-engine Parts**

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

CONVEYORS
Black Clawson Company
Jeffrey Mfg. Co.
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

CORES
Elixman Paper Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

COUCH ROLLS
Beloit Iron Works
Improved Paper Machinery Corp.
Manchester Machine Co.

COUPLINGS
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Dodge Mfg. Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES
Reading Crane & Hoist Corp.
Whiting Corp.

CURL TESTERS
Testing Machines, Inc.
Thwing-Albert Instrument Co.

CUTTERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

CYLINDER MOULDS
Black-Clawson Co.
Hayden Wire Works Inc.
Improved Paper Machinery Corp.
Manchester Machine Co.
Rice Barton Corporation
Sinclair Company

CYLINDERS
Biggs Boiler Works Co.
M. W. Jenkins Sons, Inc.

CYLINDER WIRES
Hayden Wire Works Inc.
Wisconsin Wire Works

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DANDY ROLLS
Plank Company

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DEFOAMERS
American Cyanamid Co., Industrial Chem. Div.
Hercules Powder Co., Inc.

DE-INKING
Bird Machine Co.
Denver Equipment Co.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Rice Barton Research Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Jackson & Church Co.
Kinsley Chemical Co.
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Testing Machines, Inc.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company, Industrial Chemicals Division
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTER CIRCULATING SYSTEMS
Fibre Making Processes, Inc.

DIGESTERS
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Pandia, Inc.
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
Westinghouse Electric Corp.

DRIERS
The Bagley & Sewall Company
Beloit Iron Works
Biggs Boiler Works Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Jackson & Church Co.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIERS—LABORATORY
The Noble & Wood Machine Co.
Testing Machines, Inc.

Supplying Your Requirements

AMERICA'S LEADING INDEPENDENT WASTE PAPER PACKERS

WASHINGTON, D. C.
CAMDEN, N. J.
NEW YORK, N. Y.
MINNEAPOLIS, MINN.

THOMAS PAPER STOCK COMPANY
1500 No. Hooker Street • Chicago 22, Ill.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dodge Mfg. Corp.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Jeffrey Mfg. Co.
General Electric Company
Gibbs-Brower Company, Inc.
Manchester Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.

DRUM WINDERS
Manchester Machine Co.
Rice Barton Corporation

DRYER ROLL PYROMETER
Midwest Fulton Mch. Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Waldron, John, Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The

ELECTRIC HYDROMETER
Testing Machines, Inc.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

ELECTRICAL PRECIPITATORS
Research Corporation

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMPLOYMENT SERVICE
Bixby, R. W., Inc.
Raymond, Chas. P., Service, Inc.

EMULISIFERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Biggs Boiler Works Co.
Goslin-Birmingham Mfg. Co., Inc.
Jackson & Church Co.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.
Westinghouse Electric Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
Buffalo Pumps, Inc., Roots-Connersville Div.
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.
Westinghouse Electric Corp.

FEEDERS
Jeffrey Mfg. Co.
Merrick Scale Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FIBRE BOARD MACHINES
The Noble & Wood Machine Co.

FILLERS
American Cyanamid Company, Industrial Chemicals Division
J. M. Huber Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Holyoke Machine Co.
Hungerford & Terry, Inc.
Improved Paper Machinery Corp.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Grinnell Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Dodge Manufacturing Corp.
Egan, Frank W., & Co.
Jeffrey Mfg. Co.
John Waldron Corp.
Westinghouse Electric Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOTATION EQUIPMENT
Denver Equipment Co.

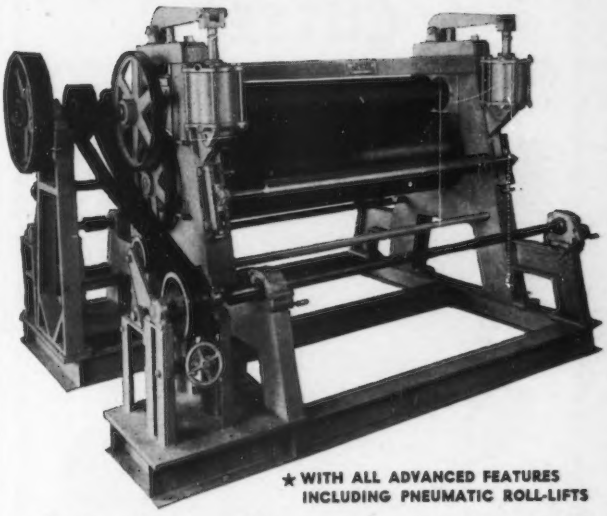
FLOW BOXES
Biggs Boiler Works Co.
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Elwell Parker Elec. Co.

FORMATION TESTERS
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
The Moore & White Co.
Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

CUSTOM BUILT EMBOSSING MACHINES



★ WITH ALL ADVANCED FEATURES INCLUDING PNEUMATIC ROLL-LIFTS

Wheeler embossing machines are unsurpassed in fine construction and design, long life, and the ability to produce superior textures. They are custom-built—backed by more than 20 years of building experience. Full details on request.

The Wheeler Roll Company

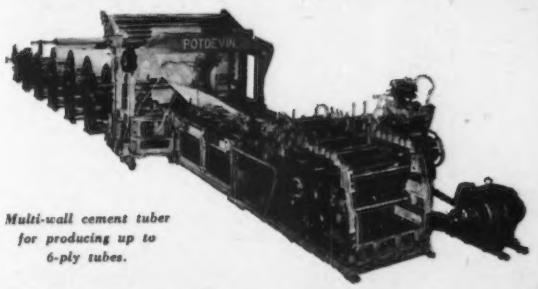
1916 LANE BLVD. • KALAMAZOO, MICH.

POTDEVIN

multi-wall heavy duty

BAG MAKING MACHINERY

60 years of dependable service



Multi-wall cement tuber for producing up to 6-ply tubes.

POTDEVIN completely equips the modern bag plant for high speed production of 2, 3, 4, 5, and 6 wall heavy-duty bags. Multi-wall valve bags with sewn ends or open-mouth bags with pasted self-opening square type bottoms—sack type bottoms—sewed-end type bottoms . . . all can be made with POTDEVIN equipment.

Consult our engineers on any problems. No obligation. Literature on request.

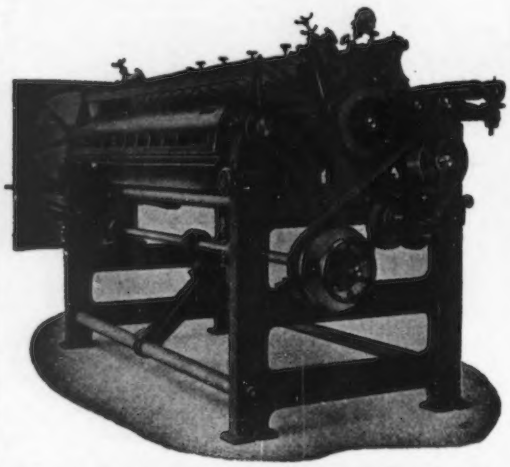
POTDEVIN MACHINE CO.

223 North Street Teterboro, N. J.

Designers and manufacturers of equipment for Bag Making, Printing, Coating, Laminating, Gluing and Labeling.

MODEL 28

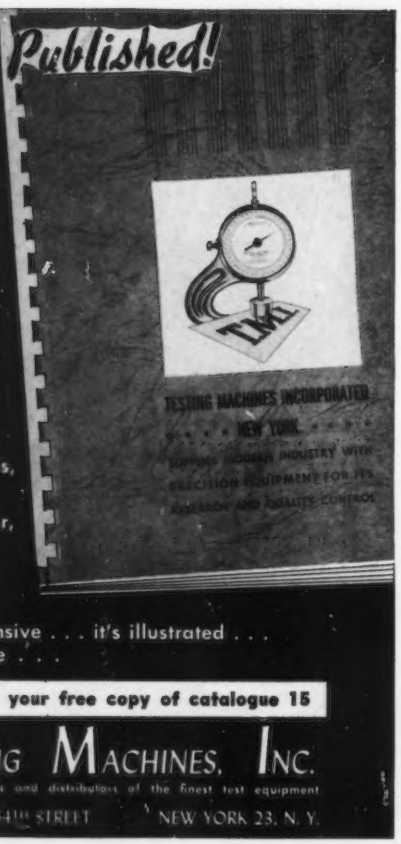
ROLLER BEARING CUTTER



HAMBLET MACHINE CO.
LAWRENCE, MASS.
MAKERS OF
SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS
CUTTER KNIVES, PATENT TOP SLITTERS

Just Published!

the catalogue of testing machines for paper, textiles, metals, plastics, rubber, laboratories



it's comprehensive . . . it's illustrated . . .
it's descriptive . . .

send for your free copy of catalogue 15

TESTING MACHINES, INC.
manufacturers and distributors of the finest test equipment
123 WEST 64TH STREET NEW YORK 23, N. Y.

FREENESS TESTERS
Testing Machines, Inc.
Williams Aparatus Co.

GASKETS
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

GEAR REDUCERS
Dodge Mfg. Corp.

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Hanchett Mfg. Co.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Co.
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
Waldron, John, Corp.

GUMMING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

GUMS
Hercules Powder Co., Inc.
National Starch Products, Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
Jackson & Church Co.
Jamar-Olman Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOISTS
Reading Crane & Hoist Corp.

HOSE (Air, Water, Suction, etc.)
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TIRES
B. F. Goodrich Co.

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Black-Clawson Co.
Brown Instrument Co.
Cambridge Instrument Co.
General Electric Co.
W. & L. E. Gurley
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Tracerlab, Inc.
A. van der Korput
Williams Apparatus Co.
Westinghouse Electric Corp.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Cram Associates
Johnson Corp.
Rice Barton Corporation
Shartle Brothers Machine Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Bros. Manufacturing Co.
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KILNS
Jackson & Church Co.
F. L. Smidth & Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
The Moore & White Co.
The Noble & Wood Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOTTERS
Black-Clawson Co.
Fibre Making Processes, Inc.
Improved Paper Machinery Corp.

LABORATORY CORRUGATOR
The Noble & Wood Machine Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
Hermann Mfg. Co.
Jackson & Church Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
Waldron, John, Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
Waldron, John, Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LINTER COTTON
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

LINTER PULP
Hercules Powder Co., Inc.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Dilts Machine Works
Jeffrey Mfg. Co.
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

MIXERS
Jackson & Church Co.
Mixing Equipment Co.

MICRO-CRYSTALLINE WAXES
Sun Oil Company

MOISTURE CONTENT CONTROL
Cambridge Instrument Co.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

MOISTURE METERS
Hart-Moisture-Meters
Testing Machines, Inc.

MOTORS
Elliott Company

MOTORS AND GENERATORS
General Electric Company
Reliance Electric & Engrg. Co.
Westinghouse Electric Corp.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Spray Engrg. Co.

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PAPER MACHINE DRIVES
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Co.
Manchester Machine Co.
Rice Barton Corporation
Westinghouse Electric Corp.

PAPER MACHINES
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Manchester Machine Co.
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machinery Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINES—LABORATORY
The Noble & Wood Machine Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.

PARAFFINE WAXES
Sun Oil Company

PARAFFIN WAX EMULSIONS
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Nopco Chemical Co.

PASTING MACHINES
Beloit Iron Works
Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hil Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

pH METERS
Cambridge Instrument Co.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company, Industrial Chemicals Company
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Jackson & Church Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Rohm & Haas Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
Lukenweld Division
Lukens Steel Company
J. O. Ross Engrg. Corp.
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Black-Clawson Company
Egan, Frank W., & Co.
Manchester Machine Co.
Rice Barton Corporation

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESS ROLLS
Beloit Iron Works
Black-Clawson Co.
Goodrich, B. F., Company, Inc.
Manchester Machine Co.
Rice Barton Corporation

PRESSURE FILTERS
Holyoke Machine Co.
Jackson & Church Co.

PRESSURE VESSELS
Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

PRESSES
Beloit Iron Works
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Fibre Making Processes, Inc.
Gibbs-Brower Company, Inc.
Hudson-Sharp Machine Co.

WEST VIRGINIA PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y

35 East Wacker Drive
Chicago 1, Ill.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED
ENGLISH FINISH
LITHOGRAPH
LABEL
OFFSET
EGGSHELL
MUSIC
POSTER
BOND
WRITING
ENVELOPE
MIMEOGRAPH
INDEX BRISTOL
POST CARD
COVER
CUP AND CONTAINER
FILE FOLDER
COATED
MACHINE COATED

KRAFT LINER BOARD
KRAFT CONVERTING AND KRAFT ENVELOPE

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

EVERY STEP A SAFE STEP WITH **BLAW-KNOX GRATING**

Everyone walks safely, confidently on Blaw-Knox Electroforged Steel Grating . . . the one-piece panels stay rigid and strong—without shimmy or shake—because there are no parts to work loose. Twisted cross bars provide sure footing under the most adverse conditions. For complete information, write for Bulletin 2365.

BLAW-KNOX GRATING
Industry's first choice for
• SAFETY • STRENGTH • LONG LIFE
• LOW UPKEEP • SELF-CLEANING

Grating Department
BLAW-KNOX DIVISION of Blaw-Knox Co.
2055 Farmers Bank Bldg.,
Pittsburgh 22, Pa.

BLAW-KNOX ELECTROFORGED STEEL GRATING

Jackson & Church Co.
Manchester Machine Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Testing Machines, Inc.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULLEY
Black-Clawson Co.
Dodge Mfg. Corp.
Rice Barton Corporation

PULP CLASSIFIER
Testing Machines, Inc.
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP CLEANERS
Bird Machine Co.
Nichols Engrg. & Research Corp.

PULP STOCK VALVES
Crane Company
Grinnell Company
Record Fdy. & Mach. Co.
Rice Barton Research Corp.
Shartle Brothers Machine Co.

PULPERS
Apmew, Inc.
Bauer Brothers Co.
Cowles Company
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
The Noble & Wood Machine Co.
Rice Barton Research Corp.
Shartle Brothers Machine Co.

PULPS
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc.
Nordicus, Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.
Restigouche Co., Ltd.

PULP SCREENS
Bird Machine Co.
Trimbey Machine Works

PULPSTONES
Norton Company

PULP TESTERS
Testing Machines, Inc.
Williams Apparatus Co., Inc.

PULPWOOD WASHERS
Fibre Making Processes, Inc.

PULVERIZING MILLS
Combustion Engineering-Superheater, Inc.
Jeffrey Mfg. Co.
F. L. Smidth & Co.

PUMPS
Apmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fibre Making Processes, Inc.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson-Sharp Mch. Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.
Waldron, John, Corp.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hermann Mfg. Co.
Jackson & Church Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
The Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Apmew, Inc.
Bird Machine Company
General Electric Co.
Improved Paper Machinery Corp.
Johnson Corp.
Shartle Brothers Machine Co.
Taylor Instrument Companies
Trimbey Machine Works
Westinghouse Electric Corp.

RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
B. F. Goodrich Co.
Holyoke Machine Co.
Lindsay Wire Weaving Co.
Lobdell United Co.
Manchester Machine Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stowe-Woodward Inc.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

ROTARY KILNS
Biggs Boiler Works Co.
F. L. Smidth & Co.

ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

RUBBER LINING
B. F. Goodrich Co.

RUBBER PRODUCTS
The Goodyear Tire & Rubber Company

SATURANTS
B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.
Improved Paper Machinery Corp.

SAWS
Simonds Saw & Steel Co.

SCALES
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS
Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Trimbey Machine Works
Valley Iron Works Co.

SHAKE STICKS
Westinghouse Electric Corp.

SHEET MACHINES
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hermann Mfg. Co.
Testing Machines, Inc.
Valley Iron Works Co.
Williams Apparatus Co., Inc.

SHEET MACHINES—LABORATORY
Testing Machines, Inc.
The Noble & Wood Machine Co.

SHOWER PIPES
Bird Machine Company
Black-Clawson Company
Dowingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.
Jackson & Church Co.
Jeffrey Mfg. Co.

SIZE PRESSES
Black-Clawson Co.
Manchester Machine Co.
Rice Barton Corporation

SIZING
American Bitumuls & Asphalt Co.
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

SLIME CONTROL
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Magnuson Products Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alakli Div.

SLITTERS
The Bagley & Sewall Company
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Clark-Aiken Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson-Sharp Mch. Co.
Improved Paper Machinery Corp.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuffs Corp.
Nopco Chemical Co.

SPECIAL MACHINERY
Biggs Boiler Works Co.
Dilts Machine Works
Egan, Frank W., & Co.
Jackson & Church Co.
Manchester Machine Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

SPEED REDUCERS
Dodge Manufacturing Corp.

SPLICING TISSUE
Williams-Gray Co.

STAINLESS STEEL
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

STARCH
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products, Inc.

STEAM JOINTS
The Moore & Whtie Co.
Rice Barton Corporation
Shartle Brothers Machine Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Johnson Corp.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
The Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Jackson & Church Co.
The Sandy Hill Iron & Brass Works

STRETCH TESTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOX COVERS
Appleton Wood Products
Westinghouse Electric Corp.

SUCTION BOXES
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SUCTION ROLLS
Beloit Iron Works
Manchester Machine Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SULPHUR DIOXIDE
American Cyanamid Company, Calco Chemical Div.
Virginia Smelting Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

SYNTHETIC RESINS
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Rohm & Haas Co.

SYPHONS
Cram & Associates

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Sons, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stebbins Engrg. Co.

TEARING TESTERS
Thwing-Albert Instrument Co.
Testing Machines, Inc.

TENSILE TESTERS
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Scott Testers, Inc.
Testing Machines, Inc.
A. van der Korput

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Ross Paper Machinery Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TIRES
Stroh Process Steel Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TOOLS
Walworth Company

TRACTORS AND TRUCKS
Elwell Parker Elec. Co.

TRANSMISSIONS
Alexander Bros. Belting Co.
Dodge Mfg. Corp.
Jeffrey Mfg. Co.
More Chain Co.

TRAPS
Crane Co.
Grinnell Company
Johnson Corporation
Shartle Brothers Machine Co.

TUBE MILLS
F. L. Smidth & Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works

TUBING, MECHANICAL
National Tube Co.

TUBS
Biggs Boiler Works Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TURBINES
De Laval Turbine Co.
General Electric Company
Westinghouse Electric Corp.

UNWINDERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Rice Barton Corporation
Waldron, John, Corp.

USED EQUIPMENT
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machinery Co.
Shartle Brothers Machine Co.

V-BELTS
Dodge Mfg. Corp.
Goodrich, B. F., Company, Inc.

VALVES
The Bagley & Sewall Company
Crane Company
DeZurik Shower Co.
Dilts Machine Works
Grinnell Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
William Powell Co.
Record Fdy. & Mch. Co.
Rice Barton Research Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Walworth Company

VATS
Biggs Boiler Works Co.
Black-Clawson Co.
Beloit Iron Works
Rice Barton Corporation

WASHERS
The Bagley & Sewall Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Improved Paper Machinery Corp.
Jackson & Church Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING EQUIPMENT
Hungerford & Terry, Inc.
Jeffrey Mfg. Co.

WATER CONDITIONING
Calgon, Inc.
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Brass Works

WATER DISPERSIONS
American Cyanamid Company Industrial Chemicals Division
Naugatuck Chemical Division of U. S. Rubber Co.
Rohm & Haas Co., Resinous Products Div.

WATER FILTERS
Bird Machine Co.
Holyoke Machine Co.
Improved Paper Machinery Corp.

WATER FINISH EQUIPMENT
The Permutit Company

WATER PENETRATION TESTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

WATER SOFTENERS
Hungerford & Terry, Inc.
Wynadotte Chemicals Corp. Michigan Alkali Div.

WATER VAPOR CUPS
Testing Machines, Inc.
Thwing-Albert Instrument Co.

WAXING MACHINERY
Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WEB TENSION CONTROL
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Waldron, John, Corp.

WELDING EQUIPMENT
General Electric Company
Walworth Company
Westinghouse Electric Corp.

WET MACHINES
The Bagley & Sewall Company
Black-Clawson Company
Carthage Machine Co.
Dowingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Pusey & Jones Corp.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WET STRENGTHENING AGENTS
American Cyanamid Company Industrial Chemicals Division
Hercules Powder Co., Inc.
Plaskon Div. Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co.

WETTING AGENTS
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Plaskon Division Libbey-Owens-Ford Glass Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp. Michigan Alkali Div.

WHITE WATER TREATING EQUIPT.
Bird Machine Co.
Hungerford & Terry, Inc.
The Sandy Hill Iron & Brass Works

WINDERS & REWINDERS
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works (Kohler Systems)
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Manchester Machine Co.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rice Barton Corporation
Ross Paper Machinery Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron, John, Corp.

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Waldron, John, Corp.

WIRE BRUSHES
M. W. Jenkins Sons, Inc.
Williams-Gray Co.

WIRE GUIDES
Black-Clawson Company
Gilbert & Nash

WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.
Wisconsin Wire Works

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.
Manchester Machine Co.

INDEX TO ADVERTISERS

A

Alan Wood Steel Co. ..... —
Alexander Brothers ..... —
Amercoat Corp. 17
American Bitumuls & Asphalt Co. ..... —
American Cyanamid Co., Calco Chemicals Div. ..... —
American Cyanamid Co., Industrial Chemicals Div. ..... —
American Steel & Wire Co. ..... —
Antara Chem. Div., General Dyestuff Corp. ..... —
Apmew, Inc. ..... —
Appleton Machine Co., The ..... —
Appleton Wire Works, Inc. 2
Appleton Woolen Mills 46
APW Products Co. 14
Armco Drainage & Metal Products ..... —
Armco Steel Corp. ..... —
Armstrong Machine Works ..... —
Asten-Hill Mfg. Co. ..... —

B

Babcock & Wilcox Co. ..... —
Bagley & Sewall Co. ..... —
Bahr Bros. Mfg. Co. ..... —
Bailey Meter Co. ..... 20 & 21
Barrell, Wm. L., Co. ..... —
Bauer Bros. Co. ..... —
Beckman Instruments, Inc. ..... —
Beloit Iron Works ..... —
Biggs Boiler Works Co. ..... —
Bird Machine Co. 13
Bixby, R. W., Inc. ..... —
Black-Clawson Co. 6
Blaw-Knox Co. 59
Bowsher, N. P., Co. ..... —
Brown Co. ..... —
Buffalo Pumps, Inc. ..... —
Bulkley, Dunton Processes, Inc. ..... —
Byron Jackson Co. ..... —

C

Calgon, Inc. 55
Cambridge Instrument Co. 46
Cameron Machine Co. ..... —
Carnegie-Illinois Steel Corp. ..... —
Carthage Machine Co. 44
Chemipulp Process, Inc. 51
Chicago Bridge & Iron Co. ..... —
Ciba Company ..... —
Clark-Aiken Co. ..... —
Classified Advertising 50
Clearing House 50
Clinton Foods, Inc. ..... —
Columbia-Southern Chem. Corp. ..... —
Combustion Enginering - Superheater, Inc. ..... —
Cowles Co., Inc. ..... —
Cram, H. G., Assoc. ..... —
Crane Co. ..... —
Crucible Steel Corp. of America 25

D

De Laval Steam Turbine Co. .. 44
Denver Equipment Co. ..... —
DeZurik Shower Co. ..... —
Diamond Alkali Co. ..... —
Dietz Machine Works ..... —
Dilts Machine Works 6
Dings Magnetic Separator Co. . —
Dodge Manufacturing Co. ..... —
Dow Chemical Co. 22
Downingtown Mfg. Co. ..... —
Draper Brothers Co. ..... —
du Pont, E. I., de Nemours & Co. Electrochemical Dept. ..... —
du Pont, E. I., de Nemours & Co. Dyestuffs Dept. ..... —
du Pont, E. I., de Nemours & Co. Grasselli Chem. Dept. ..... —
du Pont, E. I., de Nemours & Co. Polychemicals Dept. ..... —

E

Ebasco Services, Inc. ..... —
Egan, Frank W., & Co. ..... —
Elixman Paper Core Co. ..... —
Elwell Parker Elec. Co. ..... —
English China Clays Sales Corp. —

F

Farrel-Birmingham Co., Inc. 33
Ferguson, The H. K., Co. 43
Fibre Making Processes 55
Fibre Glass Div., Libbey-Owens-Ford Glass Co. ..... —
Fitchburg Screen Plate Co. ... —

G

Geigy Co. ..... —
General Dyestuff Corp. ..... —
General Electric Co. ..... —
Gibbs-Brower Co. 52
Gilbert & Nash Co. ..... —
Glidden Co. ..... —
Goodrich Chemical Co. ..... —
Goodrich Co., B. F. ..... —
Goodyear Tire & Rubber Co. Back Cover
Goslin-Birmingham Mfg. Co. .. —
Gottesman & Co. ..... —
Graton & Knight Co. ..... —
Graver Tank & Mfg. Co. ..... —
Grinnell Co., Inc. ..... —
Gurley, W. & L. E. ..... —

H

Hall, Thomas W., Co., Inc. ... 51
Hamblet Machine Co. 58
Hanchett Mfg. Co. ..... —
Hardinge Co., Inc. ..... —
Hart Moisture Meters, Inc. ... —
Hayden Wire Works ..... —
Heinrich, H. H., Co. 48
Hercules Powder Co. ..... —
Hermann Manfg. Co. ..... —
Heyden Chemical Co. ..... —
Holyoke Machine Co. ..... —
Hooker Electrochemical Co. ... 35
Huber, J. M., Corp. ..... —
Hubinger Co., The ..... —
Hudson-Sharp Machine Co. .... —
Hungerford & Terry, Inc. ..... —
Huyck, F. C., & Sons ..... —
Hydro-Silica Corp. ..... —

I

Improved Paper Machy. Corp. . —
International Nickel Co. ..... —
International Nickel Co. 37

J

Jackson & Church Co. ..... —
Jeffrey Mfg. Co. ..... —
Jenkins, M. W., Sons, Inc. ... —
Johnson Corp., The ..... —
Johnson, Alvin H., & Co. ..... —
Jones, E. D., & Sons Co. ..... —

K

Kinsley Chemical Co. 51
Knox Woolen Co. ..... —
Koppers Co., Inc. ..... —

L

Langston, Samuel M., Co. ..... —
Libbey-Owens-Ford Glass Co. . —
Lindsay Wire Weaving Co. ... —
Lobdell United Co. ..... —
Lockport Felt Co. ..... —
Lodding Engineering Co. ..... —
Lukens Steel Co. ..... —
Lyddon Co. 49
Lynch Corp. ..... —

M

Magnus Metal Div., Nat. Lead Co. ..... —
Main, Charles T., Inc. 46
Manchester Machine Co. ..... —
Manheim Mfg. & Belting Co. .. —
Mead Sales Co., The ..... —
Meincke, A. M., & Son 46
Meisel Press Mfg. Co. 56
Mercer Paper Tube Co. 47
Merrick Scale Co. ..... —
Michigan Steel Casting Co. ... 46
Midwest Fulton Machine Co. .. —
Minneapolis-Honeywell Regulator Co. ..... —
Mixing Equipment Co. ..... —
Monsanto Chemical Co. ..... —
Moore & White Co. ..... —
Moorhead Electrical Machinery 51
Morden Machines Co. ..... —
Morey Paper Mill Supply Co. —
Morgan, Stanley, & Co. ..... —
Mount Hope Machinery Co. ... —
Murray, D. J., Mfg. Co. ..... —

N

Nash Engineering Co. ..... —
National Aluminate Corp. ..... —
National Aniline Div., Allied Chem. & Dye Corp. ..... —
National Starch Products, Inc. . —
National Tube Co. ..... —
Naugatuck Chem. Div., U. S. Rubber Co. ..... —
Niagara Alkali Co. ..... —
Nichols Engrg. & Research Co. —
Noble & Wood Machine Co. ... —
Nopco Chemical Co. ..... —
Nordicus, Inc. 47
Norton Co. ..... —

O

O'Donoghue, Roderick ..... —
Oldbury Electro Chemical Co. . —

P

Pandia, Inc. ..... —
Parsons & Whittemore 49
Pennsylvania Salt Mfg. Co. ... —
Perkins, B. F., & Sons Co. ... —
Perkins Goodwin Co. ..... —
Petroleum Specialties Co. ..... —
Pioneer Paper Stock Co. ..... —
Pittsburgh Piping & Equip. Co. —
Plaskon Div., Libby-Owens-Ford —
Poirier Control Co. ..... —
Potdevin Machine Co. 57
Powell, William, Co. 3
Price & Pierce, Ltd. 54
Pulp and Paper Trading Co. .. —
Process Industries Engineers, Inc. ..... —
Pulp Sales Corp. ..... —
Pusey & Jones Corp., The ..... —

R

Railway Supply & Mfg. Co. .. —
Raymond, Chas. P., Service, Inc. 50
Reading Crane & Hoist Co. ... —
Record Fdy. & Machine Co. .. —
Red Ray Manufacturing Co., Inc. —
Reichhold Chemicals, Inc. ..... —
Reliance Elec. & Engrg. Co. ... —
Research Corp. 10
Restigouche Co., Ltd. ..... —
Rice Barton Corp. ..... —
Reidel, Gus, & Son ..... —
Rogers, S. C., & Co. ..... —
Hohm & Haas Co. ..... —
Roosevelt Paper Co. ..... —
Roots-Connersville Blower Div. . —
Ross, J. J., Co. ..... —
Ross, J. O., Engrg. Co. 15
Ross Paper Machinery Co. .... —
Rust Engineering Co. ..... —

S

Sandusky Fdy. & Mch. Co. .... —
Sandy Hill Iron & Brass Wks. 8
Seaboard Air Line R.R. Co. .. —
Shartle Bros. Machine Co. ... 6
Shuler & Benninghofen ..... —
Sil Industries ..... —
Simonds Saw & Steel Co. ..... —
Sinclair Refining Co. 29
Sirrine, J. E., Co. ..... —
SKF Industries ..... —
Smidth, F. L., & Co. 63
Smith, A. O., Corp. ..... —
Smith & Winchester Mfg. Co. . —
Socony Vacuum Oil Co., Inc. .. —
Sonoco Products Co. ..... —
Spray Engineering Co. ..... —
Stowe-Woodward ..... —
Stroh Steel Co. 45
Sun Oil Co. ..... —
Sutherland Refiner Corp. ..... —
Swenson Evaporator Co. Front Cover

T

Taylor Instrument Cos. ..... —
Taylor Machine Works ..... —
Taylor Stiles & Co. ..... —
Tennessee Coal, Iron & R. R. Co. ..... —
Testing Machines, Inc. 58
Texas Co., The 4
Texas Gulf Sulphur Co. ..... —
Thiele Kaolin Co. ..... —
Thomas Paper Stock Co. 56
Thwing-Albert Instrument Co. . 44
Timken Roller Bearing Co. ... —
Titanium Pigment Corp. ..... —
Torrington Co., Inc. 31
Trecerlab, Inc. ..... —

U

United Carbon Co., Inc. 54
United States Steel Export Co. —
United States Steel Supply Co. —
U. S. Rubber Co. 19
U. S. Steel Co. ..... —

V

Valley Iron Works Co. ..... —
Vanderbilt, R. T., Co. ..... —
Van der Korput, A. ..... —
Virginia Smelting Co. ..... —

W

Waldron, John, Corp. ..... —
Walworth Co. 27
Waterbury Felt Co. ..... —
Weber, H. G., & Co., Inc. .... —
Wellman Engineering Co. ..... —
Westinghouse Electric Corp. ... —
West Virginia Pulp & Paper Co. 59
Weyerhaeuser Timber Co. ..... —
Wheeler Roll Co. 57
Whiting Corp. ..... Front Cover
Williams Apparatus Co. ..... —
Williams Gray Co. ..... —
Wisconsin Wire Works ..... —
Wolferz, C. W. ..... —
Wyandotte Chemicals Corp. .... —

BUSINESS STAFF

Arthur E. Gordon, Business Mgr.

Frederick B. Grosse, Production Mgr.

Bruce E. Brown
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

George Heitzeberg
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

H. K. Vinton
CHICAGO, 3, ILL.: Room 1020, 79 West Monroe St. CEntral 6-2784

H. L. Poulton
PITTSBURGH, 11, PA.: 610 Pennridge Road. Hemlock 1-1571

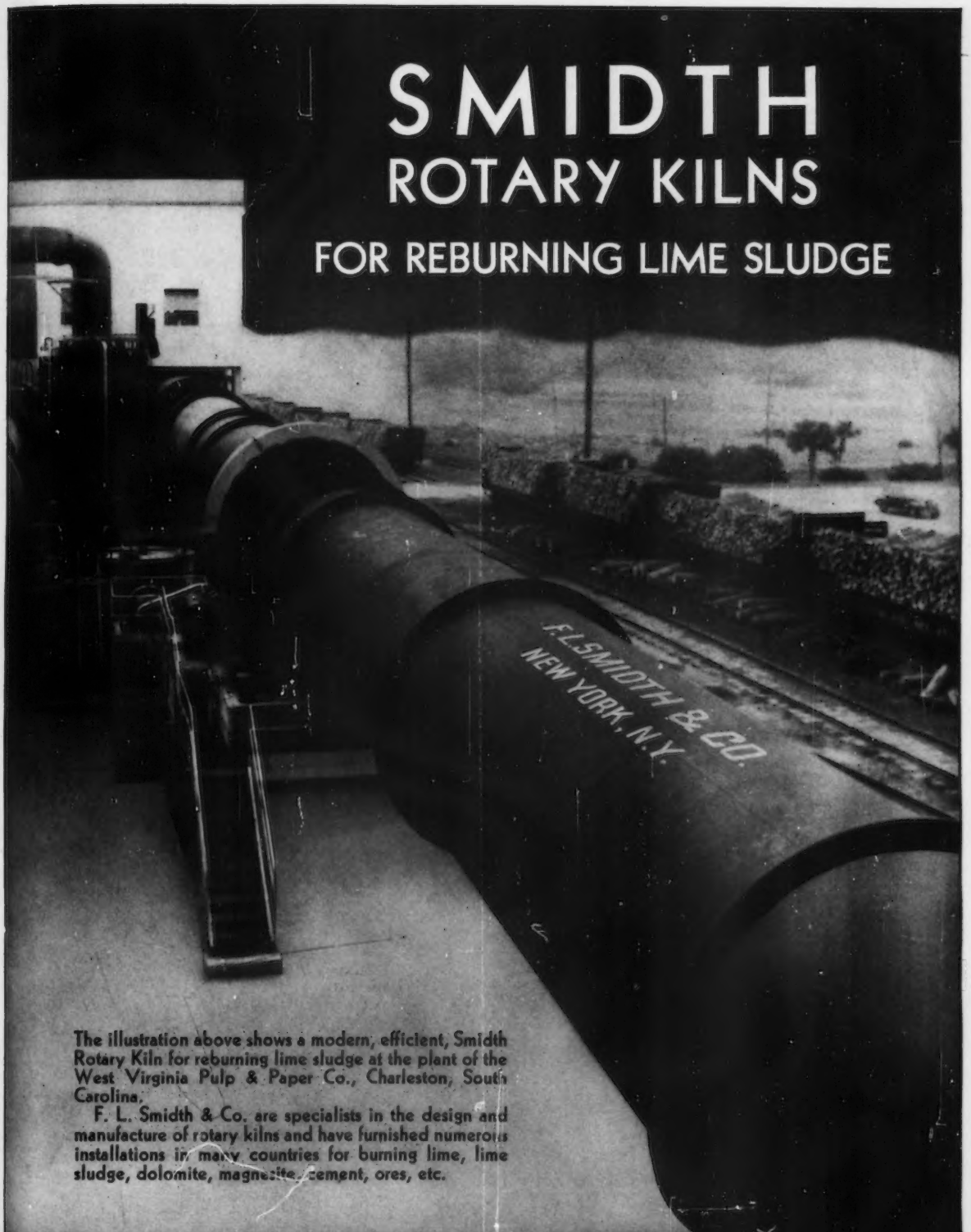
McDonald-Thompson Company
LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391
SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-0647
SEATTLE, 1, WASH.: Terminal Sales Bldg. MAin 3860
PORTLAND, 4, ORE.: 115 SW Fourth Ave. ATwater 7401
DENVER, 2, COLO.: 222 Colorado Nat'l. Bank Bldg. MA 2733

Edward M. Buck, Inc.
DALLAS, 5, TEXAS: 205 Irwin-Keasler Bldg., Riverside 4042
ATLANTA, 3, GA.: 5 Ivy Bldg., N.E. LAmar 4719

While we strive for accuracy in preparing the above index, which is purely a service to our readers, we cannot be responsible for errors.

HUGHES PRINTING CO.
EAST STROUDSBURG, PA.

SMIDTH
ROTARY KILNS
FOR REBURNING LIME SLUDGE



The illustration above shows a modern, efficient, Smidth Rotary Kiln for reburning lime sludge at the plant of the West Virginia Pulp & Paper Co., Charleston, South Carolina.

F. L. Smidth & Co. are specialists in the design and manufacture of rotary kilns and have furnished numerous installations in many countries for burning lime, lime sludge, dolomite, magnesite, cement, ores, etc.

F. L. SMIDTH & CO.

11 WEST 42nd STREET • NEW YORK, N. Y.

LONDON • PARIS • COPENHAGEN • CANADA • BOMBAY

5 YEARS' SERVICE

Without a Shutdown!

CHAIN drive used formerly on this heavy-duty mill drive was a constant source of trouble, with link-pin breakages causing frequent shutdowns—plus extreme noise and dirt condition—on this drive.

The G.T.M.—Goodyear Technical Man—installed Steel Cable V-Belt Drive in January 1947. *This drive hasn't been touched for any reason since, except one belt take-up after about a year.*

GOODYEAR INDUSTRIAL RUBBER PRODUCTS
GTM-Specified
STEEL CABLE V-BELT DRIVE
replacing chain drive
58" DRIVEN PULLEY
14.5" DIA DRIVE PULLEY: 600 RPM
MATCHED SET OF 12 STEEL CABLE V-BELTS

LOOK FOR YOUR GOODYEAR INDUSTRIAL RUBBER PRODUCTS DISTRIBUTOR *in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods." He handles Hose, Flat Belts, V-Belts, Molded Goods, Packing, Tank Lining, Rubber-Covered Rolls, built to the world's highest standard of quality.*

GOODYEAR

THE GREATEST NAME IN RUBBER